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A STORY

Painting of Jorge Cullen Ayerza

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PRESIDENT WILSON'S FOURTH OF JULY ADDRESS

THE most significant feature of the elaborate celebration of the Fourth of July, the national holiday of the United States, was undoubtedly the remarkable gathering of representatives of 33 different nationalities at Mount Vernon, once the home and now the last resting place of George Washington, Father of American Independence and first President of the United States. The occasion was the result of a memorial addressed to President Wilson on the 21st of last May by organizations of 24 different groups of foreign-born citizens announcing their intention of especially celebrating Independence Day of 1918 as a festival of loyalty to the United States. The President indorsed the idea and asked the citizens of the United States generally to join in the celebrations, which were held in all the large cities of the country. Incidental to this general celebration, however, a few days before July 4 a suggestion was made by a member of one of the participating organizations that each race that had found a home in the United States send a representative to Washington on a pilgrimage to Mount Vernon, and to there lay a wreath of flowers on the tomb of the great founder of American liberty, on the anniversary of the Declaration of Independence. This suggestion was forthwith enthusiastically adopted by the various organizations, and as a result 33 delegates, representing as many organizations of foreign-born citizens and their immediate descendants, gathered in Washington as a committee to carry out the plan. President Wilson had been invited to join in this unique ceremony and to deliver an address upon the occasion. On the afternoon of July 4, therefore, the President and Mrs. Wilson, together with this committee and a party of invited guests composed of members of the Cabinet and many distinguished diplomats from foreign countries, made the trip from Washington to

Photo by Committee on Public Information

ARRIVING AT THE MOUNT VERNON PIER.

Reproduction of photograph showing some of the distinguished guests of the President as they landed from *The Mayflower* on the pier at Mount Vernon. In the party were, besides the members of the President's family, many famous diplomats and statesmen, as well as the 33 delegates from as many organizations of foreign-born citizens, who had come to Washington to pay homage at the great shrine of American patriotism on the occasion of the anniversary of the day of independence.

Photo by the Committee on Public Information

PRESIDENT WILSON DELIVERING HIS FAMOUS FOURTH OF JULY ADDRESS AT MOUNT VERNON,

Mrs. Wilson standing at his side, and on the left is the Secretary of State, Mr. Lansing. In the group directly back of the President is Mr. George Creel, chairman of Committee on Public Information.

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THE HOME OF GEORGE WASHINGTON.

The mansion on the estate of Mount Vernon was built for Lawrence, the older half-brother of George Washington, in 1743. Lawrence Washington and his only daughter died and left Gen. Washington as sole heir to the estate, which is located on the Virginia side of the Potomac River about 16 miles south of the city of Washington. With the exception of the years spent as President of the United States, Washington made Mount Vernon his home from 1759 to the day of his death. In 1860 the estate was purchased by the Mount Vernon Ladies' Association of the Union, and since then has been restored as far as possible to the exact condition it was in when Washington lived there. In the rooms of the mansion are to be found many of the pieces of furniture used by him and Martha Washington, his wife, as well as a great many personal relics of both. Near the mansion are a beautiful rose garden and a deer park, carefully kept in their original condition. Mount Vernon has become a permanent shrine for not only American patriots, but for the lovers of liberty the world over.

Mount Vernon on the presidential yacht, *The Mayflower*. An assembly of over 20,000 people had gathered at the home of Washington to witness the simple ceremony planned for the occasion. While the great Irish tenor, John McCormack, sang "The Battle Hymn of the Republic," President Wilson and each of the 33 delegates deposited their wreaths on the tomb. Then, the party having moved to an open space a short distance from the sacred vault, Mr. Streychmans, the delegate from the Belgians, made a brief speech in behalf of the committee, and upon its conclusion President Wilson delivered the following memorable address:

Gentlemen of the Diplomatic Corps and my Fellow Citizens: I am happy to draw apart with you to this quiet place of old counsel in order to speak a little of the meaning of this day of our Nation's independence. The place seems very still and remote. It is as serene and untouched by the hurry of the world as it was in those great days long ago when Gen. Washington was here and held leisurely conference with the men who were to be associated with him in the creation of a nation. From these gentle slopes they looked out upon the world and saw it whole, saw it with the light of the future upon it, saw it with modern eyes that turned away from a past which men of liberated spirits could no longer endure. It is for that reason that we can not feel, even here, in the immediate presence of this sacred tomb, that this is a place of death. It was a place of achievement. A great promise that was meant for all mankind was here given plan and reality. The associations by which we are here surrounded are the inspiring associations of that noble death which is only a glorious consummation. From this green hillside we also ought to be able to see with comprehending eyes the world that lies about us and should conceive anew the purposes that must set men free.

It is significant—significant of their own character and purpose and of the influences they were setting afoot—that Washington and his associates, like the barons at Runnymede, spoke and acted, not for a class, but for a people. It has been left for us to see to it that it shall be understood that they spoke and acted, not for a single people only, but for all mankind. They were thinking, not of themselves and of the material interests which centered in the little groups of landholders and merchants and men of affairs with whom they were accustomed to act, in Virginia and the colonies to the north and south of her, but of a people which wished to be done with classes and special interests and the authority of men whom they had not themselves chosen to rule over them. They entertained no private purpose, desired no peculiar privilege. They were consciously planning that men of every class should be free and America a place to which men out of every nation might resort who wished to share with them the rights and privileges of free men. And we take our cue from them, do we not? We intend what they intended. We here in America believe our participation in this present war to be only the fruitage of what they planted. Our case differs from theirs only in this, that it is our inestimable privilege to concert with men out of every nation what shall make not only the liberties of America secure but the liberties of every other people as well. We are happy in the thought that we are permitted to do what they would have done had they been in our place. There must now be settled once for all what was settled for America in the great age upon whose inspiration we draw to-day. This is surely a fitting place from which calmly to look out upon our task that we may fortify our spirits for its accomplishment. And this is the appropriate place from which to avow, alike to the friends who look on and to the friends with whom we have the happiness to be associated in action, the faith and purpose with which we act.

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THE TOMB OF WASHINGTON.

In this very plain and unpretentious little brick structure rest the mortal remains of George Washington, the Father of American Independence, whose great spirit even now, nearly 120 years after his death, moves a nation of over 100,000,000 people. In the antechamber of the tomb are the two marble sarcophagi containing the remains of the General and his faithful wife, Martha Washington, while in the vaults lie those of other members of the Washington family. The tomb is located in a shady little dell some distance from the mansion, and about it have been planted trees of various kinds by distinguished foreign visitors, who have thus sought to pay homage to the memory of the great dead. It was a short distance from this tomb that President Wilson delivered his address on the Fourth of July, 1918.

This, then, is our conception of the great struggle in which we are engaged. The plot is written plain upon every scene and every act of the supreme tragedy. On the one hand stand the peoples of the world—not only the peoples actually engaged, but many others also who suffer under mastery but can not act; peoples of many races and in every part of the world—the people of stricken Russia still, among the rest, though they are for the moment unorganized and helpless. Opposed to them, masters of many armies, stand an isolated, friendless group of governments who speak no common purpose, but only selfish ambitions of their own by which none can profit but themselves, and whose peoples are fuel in their hands; governments which fear their people and yet are for the time their sovereign lords, making every choice for them and disposing of their lives and fortunes as they will, as well as of the lives and fortunes of every people who fall under their power—governments clothed with the strange trappings and the primitive authority of an age that is altogether alien and hostile to our own. The Past and the Present are in deadly grapple and the peoples of the world are being done to death between them.

There can be but one issue. The settlement must be final. There can be no compromise. No halfway decision would be tolerable. No halfway decision is conceivable. These are the ends for which the associated peoples of the world are fighting and which must be conceded them before there can be peace:

I. The destruction of every arbitrary power anywhere that can separately, secretly, and of its single choice disturb the peace of the world; or, if it can not be presently destroyed, at the least its reduction to virtual impotence.

II. The settlement of every question, whether of territory, of sovereignty, of economic arrangement, or of political relationship, upon the basis of the free acceptance of that settlement by the people immediately concerned, and not upon the basis of the material interest or advantage of any other nation or people which may desire a different settlement for the sake of its own exterior influence or mastery.

III. The consent of all nations to be governed in their conduct toward each other by the same principles of honor and of respect for the common law of civilized society that govern the individual citizens of all modern States in their relations with one another; to the end that all promises and covenants may be sacredly observed, no private plots or conspiracies hatched, no selfish injuries wrought with impunity, and a mutual trust established upon the handsome foundation of a mutual respect for right.

IV. The establishment of an organization of peace which shall make it certain that the combined power of free nations will check every invasion of right and serve to make peace and justice the more secure by affording a definite tribunal of opinion to which all must submit and by which every international readjustment that can not be amicably agreed upon by the peoples directly concerned shall be sanctioned.

These great objects can be put into a single sentence. What we seek is the reign of law, based upon the consent of the governed and sustained by the organized opinion of mankind.

These great ends can not be achieved by debating and seeking to reconcile and accommodate what statesmen may wish, with their projects for balances of power and of national opportunity. They can be realized only by the determination of what the thinking peoples of the world desire, with their longing hope for justice and for social freedom and opportunity.

I can fancy that the air of this place carries the accents of such principles with a peculiar kindness. Here were started forces which the great nation against which they were primarily directed at first regarded as a revolt against its rightful authority, but which it has long since seen to have been a step in the liberation of its own people as well as of the people of the United States; and I stand here now to speak—speak proudly and with confident hope—of the spread of this revolt, this liberation, to the great stage of the world itself. The blinded rulers of Prussia have roused forces they knew little of—forces which, once roused, can never be crushed to earth again; for they have at their heart an inspiration and a purpose which are deathless and of the very stuff of triumph.

OVERLOOKING A PORTION OF VALPARAISO AND THE BAY.

Like San Francisco and Kingston, in the northern hemisphere, this southern port and city has arisen anew from the ravages of earthquake and ashes of fire; more modern buildings have been erected, streets have been vastly improved, and civic betterment is to be noted on all sides. The light colored building in the center of the picture is one of the four railway stations within the city limits. On the extreme left we catch a glimpse of the pier from which sea voyagers are transferred to and from ships in the bay. On the hills to the right may be seen a portion of the residential district.

VALPARAISO: THE GREAT SOUTH PACIFIC EMPORIUM

THE Chilean Republic stretches along the Pacific Ocean for more than 2,600 miles. Fifteen ports of major importance and approximately 50 smaller ones serve Chile's maritime trading with the various countries of the world. About halfway from north to south of this coast stands Valparaiso, the most important of all the country's ports, and the greatest in point of general business of the west coast of South America. Like many other seaports and coastal cities, Valparaiso has passed through numerous vicissitudes, but each time it rises from disaster with more striking features of progress and stronger desires on the part of its citizens for commercial and municipal advancement.

Valparaiso is not only the name of the chief seaport of Chile, but the Province in which it is located also bears the same designation. The Republic has 23 of these Provinces or States and one Territory, Valparaiso Province being the smallest in the country, with an area of 1,930 square miles. In density of population, however, it outranks all other Provinces, having 182 persons per square mile, while Santiago Province comes second, with 100 people per square mile. The population of Valparaiso Province, according to the Chilean bureau of statistics (1914), is 319,000, while the city of Valparaiso has 183,479 residents. Of the city's cosmopolitan population the Germans, the English, and the Spanish form the largest colonies of foreign-born peoples, and about 5,000 of each of these nationalities would seem to be a fair estimate of Valparaiso's quota. Belgium, France, Austria, Australia, and practically all of the Latin American countries are well represented. Citizens of the United States and Canada number a few hundred; while China and Japan lend a sprinkling of Orientals.

Nearly 400 years ago, or, to be more precise, in 1536 Juan de Saavedra, a Spanish officer, founded the settlement and bestowed upon it the name of his birthplace in Spain, which in English signifies a vale of paradise. Being far distant from the centers of European population and with the few facilities for ocean travel of those early days, the growth must have been very slow; and the natives looked upon the newcomers from over the seas with murderous eyes, just as was the case in North America. By 1578 Valparaiso evidently possessed commercial or strategic importance, for it was sought and captured in that year by Sir Francis Drake and his English followers. Eighteen years later the Hawkins expedition took possession of the village; and not many years elapsed ere the Dutch

Courtesy of Brown, Dawson & E. M. Newman.

PARTIAL VIEW OF VALPARAISO.

This picture fairly illustrates the upper and lower levels of the city. On the left we have a view of one of the "ascensors," and on the right a lower part of Valparaiso and part of the bay are to be seen. There are numerous perpendicular elevators and several inclined ascensors, while winding walks and roadways offer additional facilities of communication between lower and upper sections of the city.

A NEAR VIEW OF ONE OF THE "ASCENSORS" OR INCLINED RAILWAYS OF VALPARAISO.

As one car moves upward another descends. The angle at which the car stands may serve to give one an idea of the steepness of the track. Electricity is the motive power, and at each end of the line the car locks into a little station and can not move until the station attendants give the signal. They are operated every few minutes during the rush hours of the day and evening.

under Van Noort arrived upon the scene and for a time wielded their authority. Four serious earthquakes at intervals in succeeding centuries laid the buildings low and destroyed many people. In 1866 the Spaniards came again, and, under the command of Admiral Nuñez, history records that the lower part of the town was reduced to ruins.

Chile, in responding to the spirit of independence that swept over South America in the early part of the nineteenth century, deposed the Spanish authorities in 1810, but it was some years later, or in 1818, that the battle of Maipu practically ended the Spanish dominion in the Republic. These great struggles, of course, were reflected in Valparaiso as elsewhere and had a material bearing on the city's progress.

Passing over years of more modern growth, Valparaiso was a flourishing city when, like San Francisco and Kingston, it lay in the earthquake's course (1906 7), and met a similar fate as the more northern cities by the settling of the earth's crust and the fires that followed. Therefore, Chile's greatest port has sprung forth anew virtually within the last decade, and it is to chronicle some of the more important phases of recent progress that this sketch has been prepared.

Valparaiso's location in the Southern Hemisphere is closely analogous to three other great world ports Buenos Aires, Cape Town, and Sidney. Each one lies approximately midway between parallels 30 and 40. Similarly situated in the Northern Hemisphere are San Francisco, Norfolk, Gibraltar, and Yokohama. Valparaiso is almost directly south of New York, and therefore has practically the same time. The distance between the two cities is 8,460 miles via Panama. By the new and faster steamships now in operation the actual time of passage between the cities is 19 days. San Francisco is slightly more than 5,000 miles from Valparaiso.

The city lies on the southern side of the great Bay of Valparaiso, the latter opening to the north and being about 2½ miles wide and very deep. In fact, the deepness of this bay has long retarded the efforts of the government to build breakwaters to protect shipping, as we shall see later.

From the shore line of the southern part of the bay there is a naturally level area from a few hundred feet to half a mile wide; back of this lowland there rises a series of cliffs and hills (19 distinct hills), here and there broken by deep ravines or great gullies. As the building of the town began first on the lowlands, the increase in population and in commercial importance gradually caused the people to drift to the higher levels and buildings were constructed on the hillsides. Business, however, has clung tenaciously to the lower parts of the city, while the hills have become more or less popular as a place of residence.

PORT SCENES IN VALPARAISO.

Upper: Looking down a long row of steam cranes on the water front. These cranes are capable of lifting tons of material. Many horses for the warring powers in Europe were picked up by these machines and placed somewhat tenderly on boats from which they were later transferred to ocean ships. Lower: Another view of a section of the water front with its incoming manufactured goods.

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PLAYA ANCHA PARK, VALPARAISO.

This public playground has an area of several acres and is used extensively for military parades, etc., the fine shade trees, seats, and other attractions making the park also popular with the general public.

A SECTION OF GRAND AVENUE, VALPARAISO.

This photograph furnishes a fair illustration of the efforts of the city authorities in providing shade trees and otherwise advancing civic betterment, which has been undertaken with renewed spirit since the earthquake of 1906.

PLAZA DE LOS BOMBEROS, OR FIREMEN'S SQUARE, VALPARAISO.

Fronting on this square is one of the city's leading hotels, as indicated by the sign and the handsome structure. This building is only one block from the Malecon or water front and is especially convenient for travelers or those associated with shipping interests.

Passing between Capes Piedra and Angeles and viewing Valparaiso from the sea, or the bay on which there are always many vessels at anchor, one looks upon a brownish landscape, apparently dry and barren as the hills rise to 1,200 or 1,500 feet to southward and westward. In the latter direction the natural fortress upon which stands Chile's naval academy is especially conspicuous. Drawing closer, the fine business edifices of the lower town are indications of progress, while the private homes that dot the hills reveal the expenditure of large sums of money in building modern and even palatial homes.

Extending in a semicircular course, a magnificent stone and concrete sea wall, commenced in 1885, now provides an enduring embankment from which the bulk of exports and imports are handled. This great embankment further provides a buffer upon which the waves of the bay break with force especially in the winter months of July, August, and September, when the "northers" often sweep inland from the sea with terrific violence. The construction of the embankment or malecon, as it is more properly called, reclaimed considerable land from the shallower water line; and this malecon now provides an unusually wide semicircular street for the vast amount of traffic that courses along the water front. Immediately facing the malecon are long rows of business houses. These are four stories in height, many of which have been built since the earthquake and fire, and are therefore modern in architectural design and better suited to commerce than the former structures.

The topography of the land upon which the city has been built is responsible for the rather winding course of many of the streets, although there are several leading streets which run parallel to parts of the malecon that are straight for considerable distances. Also in the eastern part of the lower city, which has developed considerably within recent years, the engineers have found available courses for a number of short but straight streets. Many short streets crossing at right angles the long and crooked thoroughfares lead toward the water front and the warehouse areas. The names of a few of the leading business streets are Avenida Brazil, Yungal, Chacabuco, Maipu, Victoria, Independencia, Colon, etc., while cross streets bear such names as Carrera, Rodriguez, Freire, Jeneval Cruz, San Ignacio, Merced, Ticola, etc.

The climate of central Chile may be described as delightful the greater part of the year. At Valparaiso the mean annual temperature is 59° F., with extremes of about 30° F. and 88° F., respectively. In the sun of midday the stranger feels the need of a sunshade, but after residing in the city for awhile he, like the older resident, is inclined to remain indoors during the warmest part of the summer days. In Chile the seasons are divided as follows: Spring extends from September 21 to December 21; on the latter date summer

THE VALPARAISO HOME OF "EL MERCURIO," THE OLDEST CONTINUOUS PUBLICATION IN THE REPUBLIC.

In Santiago this newspaper is published as a morning journal, while in Valparaiso it appears in the afternoon, both papers being harmoniously associated and widely read in all parts of the country.

begins and ends on March 21. Autumn lasts from March 21 to June 21, and winter follows, extending from the latter date to September 21. The temperature in Valparaiso is usually tempered by breezes from the ocean, which come with great regularity. According to observations taken at the National Observatory at Santiago, which is under 100 miles, air line, from Valparaiso, there are 58 rainy days in the average year and the amount of precipitation is given at 505 millimeters.

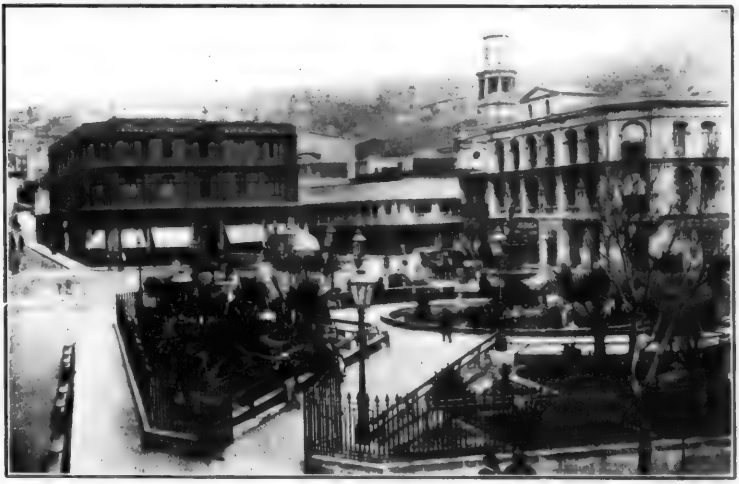
The engineers' plans for reconstructed Valparaiso (Almendial section) provide various modern features, many of which have been carried out, while others are still under construction. Unlike other Chilean cities, the parks of lower Valparaiso are not numerous and are rather small—a fact probably due to the urgent demand for business space. On the hills of the upper city there are recreation grounds and parks, which are reached by electric cars and by winding highways and which in the course of a few years will become more attractive. Notable features here are the castle-like residences, which seem to cling to precipitous hillsides and rugged cliffs, one side often being one or two stories, while the opposite side may be three or four stories, with overhanging porches and balconies, from which a broad expanse of the lower city and the bay are to be seen. At many of these homes the cultivation of flowers and creeping vines has added another pleasing feature. Here in late afternoons and evenings the busy man of affairs sits with his family or enjoys meeting friends, business for the time being forgotten.

Connecting lower and upper Valparaiso are several inclined railways, with large cars holding a score or more persons. As one car passes up another moves downward, and thus thousands of people are transported daily. At other places there are public elevators operated perpendicularly, which also serve as a means of communication; while a number of serpentine walks are available for those who are inclined to exercise their limbs. The winding and suburban roads leading to the upper city are gradually being improved for motor-car use.

The very extensive port improvements undertaken in 1912 by an English company have made fair progress, notwithstanding the difficulties arising from the world war. The great breakwaters extending outward from two points will, when completed, offer much better protection to the harbor than has prevailed in the past. The water being very deep, engineers met this difficulty by constructing giant concrete hollow cubes on land, towing them to position and sinking them by means of vast quantities of stone. Extensive improvements have already been made in the fiscal wharves, a large number of warehouses have been completed, and a number of ocean-going vessels may at the same time discharge and load cargo from the new piers which are directly connected with the Federal ware-

PUBLIC EDIFICES IN VALPARAISO.

Upper: Plaza Victoria, a section of the reconstructed city. From the band stand in the center of the picture delightful music is furnished at frequent intervals by the military bands. Center: Intendencia or headquarters of the government of the Province of Valparaiso. Lower: A near view of the main building of the Chilean Naval Academy. This structure and grounds overlook the bay and lower city, a magnificent sight either day or night.



MUNICIPAL IMPROVEMENTS IN THE CITY OF VALPARAISO.

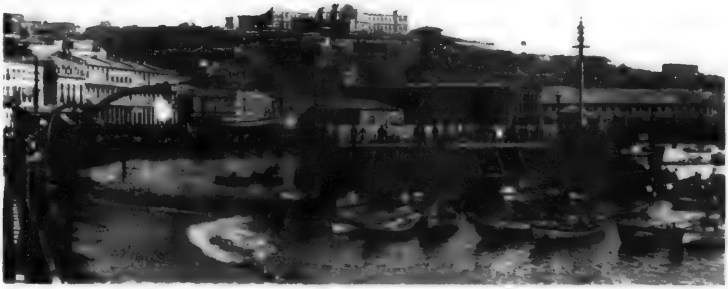
These three pictures will give the stranger a fair idea of a few of the new structures and modern streets which are characteristic of the city since its destruction by earthquake and fire in 1906. In the upper picture we note the arrangement of electric light poles, with which the city is well supplied. In the center are shown some municipal improvements, while in the lower cut are represented a business corner and a portion of one of the parks.

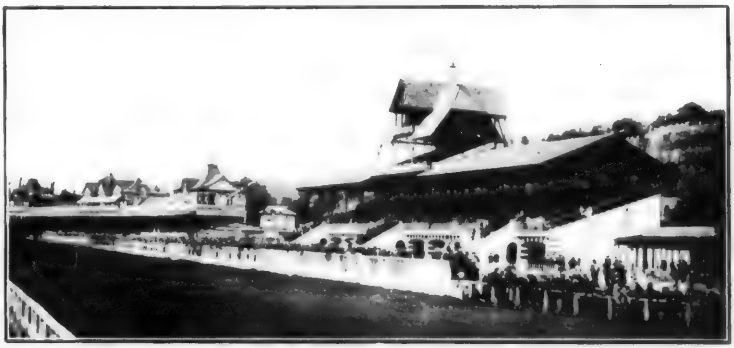
houses and customhouse. These piers have also been made of gigantic concrete blocks and stones and are in the form of an exaggerated letter T with the top toward the bay. At least an area of 220 acres will be available for ship anchorages when the breakwaters are finished. On the whole the port improvements are about half completed.

The domestic water supply of Valparaiso has been obtained at heavy expense, but is now available in adequate quantities. The waterworks are located on the Placilla Plateau, 11 miles from the city, where the reservoir is 1,180 feet above sea level and covers 4,285 acres. A dam 1,500 feet long and 55 feet high was constructed, which holds the water in a natural basin, and from which it is conveyed in pipes to filter beds at a lower level. From here the water is piped to tanks on the heights, from which it is distributed over the city.

Public transportation facilities are well developed in Valparaiso. An electric street car system covers the lower and certain parts of the upper city and also extends to suburban resorts and hamlets. Most of these cars pass the Plaza Sotomayo opposite the passenger landing, so that incoming and outgoing voyagers may avail themselves of the street cars for reaching any desired part of the city. There are also a liberal number of carriages available for public hire, while the introduction of the motor vehicles has been quite rapid in recent years. Public motor busses also do a thriving business and operate over regular routes. The Valparaiso street cars are now operated by men and women, the former managing the motor while the women serve as conductors. Women have long operated street cars in Chilean cities, but the advent of the large motor-driven car appears to demand physical strength, which the women do not possess, hence the return of men to these positions. Valparaiso cars have seats on top as well as inside, the fare for the "upper deck" being cheaper, and as a consequence few people of position patronize that part of the service, although to the stranger the ride atop is more agreeable and offers exceptional opportunities for sightseeing.

Valparaiso's public buildings are numerous and imposing and are scattered well about the lower city, while perhaps the most important group is the naval academy, located on an imposing hill many acres in area. From the latter a splendid view of the city and harbor is obtained; indeed, the experience of sitting under the large trees on comfortable seats provided for the public and overlooking the harbor and its many ships is one of the most delightful phases of the stranger's visit. At the naval academy and on various other hills dominating the city and bay fortifications have been constructed, and the nature of the hills add materially to modern defense methods which the Government has provided. Being also a naval base, one always sees warships in Valparaiso Bay and many officers in evidence about the city.





VALPARAISO SCENES.

Upper: Looking westward over a portion of the Bay of Valparaiso. The large structure crowning the heights is the Chilean Naval Academy. Center: A view in the lower city showing two of the narrow streets which make it necessary for cars to pass up one street and down another. The streets were doubtless laid out before the days of modern car traffic. Lower: Scene at Viña del Mar, practically a suburb of Valparaiso. This picture shows the fashionable race course frequented by the best people of Chile, as well as by those from adjoining countries. This resort is very popular during the summer days, and many people maintain their permanent homes there.

A PHASE OF PUBLIC TRANSPORTATION IN VALPARAISO.

This is a rear end view of one of the city's street cars, showing on the platform a woman conductor. Years ago when military service demanded so many young men of the country the operation of street cars devolved upon the women, and they have proved such a success that the man conductor is rather exceptional. In the heavy motor cars now in use, however, the motor is given over to a man while the woman acts as conductor. Note the winding stairway and the passenger ascending to the "upper deck."

Politically, the city of Valparaiso is governed like other Chilean municipalities, and in accordance with the organic law of 1891 and amendments of 1914. Each smaller municipality in the Republic is governed directly by three alcaldes and six councilmen. If a city's population exceeds 100,000 (which is approximately half of that of Valparaiso) there is an additional councilman for each 50,000 in excess of that number. Valparaiso, therefore, has three alcaldes and eight councilmen. The intendente (governor) of the Province is the presiding officer, but he has no voting power; he may, however, suspend any bill that does not meet his approval. In the absence of the intendente the first alcalde presides over the sessions of the council; and in reality the latter official discharges the duties corresponding to those of a mayor in the United States. Alcaldes are elected by the councilmen; the latter by popular vote, and they must be more than 21 years of age and have resided at least five years in the municipality to be eligible for said office. The council also elects a secretary and a city treasurer. The entire welfare of the municipality is in the hands of the council, whose activities must, of course, conform to the national organic act governing municipalities. The actual administration of affairs is divided among departments, such as treasury, public works, board of health, parks and gardens, markets, slaughterhouses, police, public assistance, etc.

A decade ago the manufacturing enterprises of the whole of Chile were represented by only about 5,000 large and small establishments. Owing largely to efforts of the well-known society, Fomento de Fabril, whose headquarters are in Santiago, and the condition resulting from the great war, manufacturing in Chile has progressed somewhat rapidly (1913 statistics showed 7,841 manufacturing establishments), and in Valparaiso the number of new factories and enlargement of old ones is especially marked. Even a mere mention of these industries would be too lengthy for this article, but in passing it may be said that Valparaiso factories turn out freight and passenger cars, locomotives, clothing, foodstuffs, furniture, carts and wagons, cigars, cement, boots and shoes, beers, boats, soaps and perfumes, various mills, three sugar refineries, electrical and gas works, etc. In the whole Province of Valparaiso, according to the 1914 publications of the Fomento de Fabril Association, there were 658 manufactories, with a total capital of 98,000,000 pesos (peso now worth $0.3605 in United States money). Canned fish, toys, rolled iron, water meters, dry battries, enameled iron, are a few of the new things made locally. The industrial plants lie largely in the western part of the city.

Four railroad stations—El Puerto, Bellavista, Baron, and Matadero—serve as many parts of the city for passenger and freight traffic. Valparaiso is the western terminus of the Trans-Andine Railroad, over a portion of which Santiago and northern and southern points in the Republic are reached.

ONE OF THE ATTRACTIVE BEACHES NEAR VALPARAISO.

In going from Valparaiso to Viña del Mar, a distance of about 6 miles, the highway, electric line, as well as the steam railway pass this bathing beach. During the summer days it is well patronized and is second in importance to the larger bathing beaches at Viña del Mar.

ATTRACTIVE SIGHTS AT VIÑA DEL MAR, ONE OF SOUTH AMERICA'S MOST POPULAR WATERING PLACES.

Upper: Mira Mar (see the sea) Promenade and a few of the homes on a bluff overlooking the Bay of Valparaiso. Center: Station of the electric railway connecting Valparaiso and Viña del Mar. The cars are operated every few minutes. There is also a steam railroad as well as a fine automobile highway between the cities. Lower: The new building of the Viña del Mar Club, one of the most popular social institutions of the resort.

Of Valparaiso's several suburban resorts, Vina del Mar is by far the most attractive, and is also one of the greatest watering places of South America. Its location, about 6 miles eastward of Valparaiso but directly on an arm of the Pacific, together with a vast surrounding area of gently rolling or level land, gives the place a natural advantage for bathing and aquatic sports as well as space for various games on land. Wide streets and avenues adorned with magnificent public and private structures are numerous; fine shade trees, parks, race tracks, casinos, clubhouses, tennis and golf courses, are a few of the other attractive features of the resort. Striking beauty is also shown by abundance of shrubs and flowers and "ivy-mantled towers," which seem to be a part of every home. Vast wealth is represented at Vina del Mar, and no stranger should fail to partake of its pleasures and gayeties. Steam and electric cars and a motor highway connect the resort with Valparaiso.

COPPER IN THE AMERICAS

CUPRUM, cuivre, cobre, or in English, copper, has long been one of mankind's most valuable metals. Many laborers toiling on the slopes of Mount Olympus obtained copper ore for the Greeks and Romans who wrought it into useful articles; even before the era of those early peoples copper products were known and valued, and down through the ages copper mining has furnished employment to a vast army of workers. It has not been a labor confined to one favored country, but people in many lands have sought and exploited copper minerals, for nature herself has been lavish in scattering deposits around the earth. To some extent copper is found in most soils, in mineral waters, and in various ores; seaweed, hay, straw, the blood of man and other animals, all show traces of copper. But for purposes of commerce and industry the great natural storehouses have been gradually opening in response to man's tireless energy and increasing skill; so that to-day the total world production is represented by enormous figures.

Peculiarly blessed have been the peoples of the Americas in the number of copper deposits suitable for commercial exploitation, and within a comparatively recent period these New World countries have advanced to front rank as copper producers. Especially notable has been the output during the last few years, as shown by statistical figures at which we shall presently glance.

What is copper? A broad definition says that copper is "A common metal of reddish color, both ductile and malleable, and very tenacious. It is one of the best conductors of heat and electricity." Scientists go farther and apply the chemical symbol cu, and place its

GIFT OF Mrs. Ellen S. Bull

A PICTURESQUE MOUNTAIN IN WHICH COPPER ORE ABOUNDS.

The operations here are conducted by the Utah Copper Co. and the mountain is at Bingham Canyon, Utah, near Salt Lake City. Infrequent rains once washed furrows into the sage-covered slopes, and to-day 50 or more modern steam shovels eat their way into the ore "rich and heavy and in conspicuous seams and veins." It is known as the largest copper mine in the world. The photograph is from a model of the mountain shown in the United States National Museum, Washington, D. C.

From New West Magazine.

A TRAINLOAD OF COPPER ON A PICTURESQUE MOUNTAIN ROAD.

This train consists of 40 cars and each car contains 70 tons of copper ore. The train is on the Bingham and Garfield Railway and the picture was taken as the train started from the busy terminal at Bingham, Utah. In the background we catch a glimpse of the Utah Copper Co.'s mammoth surface mine, or "mountain of copper," as many persons are wont to term this great deposit. Note the many terraces around the mountain, along which nearly 50 miles of railroad track have been laid in order to facilitate the task of loading the mineral.

Courtesy of Underwood & Underwood.

TYPICAL LEACHING TANKS OF A GREAT MODERN COPPER PLANT.

In these huge tanks, containing chemicals, the copper ore is separated from the general mass, the copper ore sinking to the bottom of the tank. Later, the copper is removed by mechanical process for further treatment.

A NIGHT VIEW OF THE BRADEN COPPER MINING CO.'S ESTABLISHMENT NEAR RANCAGUA, CHILE.

Here we have depicted a great copper activity, with night and day shifts of workmen who toil amid the whir of ponderous machines. At night electricity turns darkness into light and the great enterprise assumes a fantastic appearance as viewed from a distance. A mile or two away the silence of the mountains is appalling; only a halo at night indicates the location of the plant.

atomic weight at 63.43, its specific gravity at from 8.80 to 8.95; its melting point at from 1,000° C. to 1,200° C.; and combining it with its alloy, tin, they produce bronze, "the first metallic compound in common use by mankind." And it is from the very extensive use of bronze in prehistoric times that the Bronze Age derived its name. Copper is in color different from all other metals. A freshly broken piece of pure metal has a pinkish tinge, and being highly ductile as well as malleable, is easily rolled by machinery into sheets, drawn into wire, etc. Hammering the metal causes it to become harder, but heat and a cold-water immersion restore its softer quality.

No other metal, with the exception of silver, conducts electricity so admirably, hence the vast mileage of copper wires strung about the world and under the seas for transmitting electrical energy. This use, however, enormous as it is, forms only one phase of activity demanding copper. In fact, we are constantly surrounded by copper and its products. Much of the food we eat is cooked in copper vessels; the bells we hear in every direction are largely composed of copper; electric lighting devices call for copper parts; every telegraph and telephone requires its copper connections; electrical industries would be dwarfed, abandoned, or radically changed were copper not available; ships on the high seas, airplanes above the earth and railroad trains upon the land all have many parts made of copper; the metal is used in electrotyping, in tubular boilers, for the coinage of monies, and for a thousand and one other purposes. As a constituent we find it in brasses, gun metal, bronzes, bells, etc. In the factory the coppersmiths are important adjuncts to industry, and whether or not the metals they work are of pure or alloyed composition the basis is usually the ever-important copper.

With the general economic changes already wrought by the great war, the activities of copper producing regions of the world have also been altered. Normally, about 20 countries contribute the bulk of copper for world consumption, the United States being the leader in amount produced. Other countries like Japan (second in world production), Spain, Mexico, Canada, Chile, Peru, Bolivia, Germany, South Africa, Australia, Russia, Norway, etc., produce vast quantities of copper. In this connection it is interesting to note the constantly increasing copper output of the world in response to the growing demands of industry. For instance, in 1885 there were produced 229,315 metric tons of copper; in 1895, 339,994 metric tons; in 1905, 698,931; by 1912 the output reached 1,011,312 metric tons with about the same amount for 1913; with the exception of the year of the beginning of war (1914) the annual production has continued to grow. Based on figures compiled by the Engineering and Mining Journal the output of all countries in 1915 in metric tons was 1,083,730; in 1916, 1,406,353; in 1917, 1,413,056; while the advance figures of various leading operating companies for the first part of

THE BARREN REGION SURROUNDING CHUQUICAMATA, CHILE.

In this region nature has placed one of the world's greatest copper deposits, and only within the last few years has man developed the properties along modern lines. Millions of dollars have been invested, the latest mining devices installed, and to-day vast quantities of copper are being sent to the industrial world. Only a few of the buildings are to be seen in the picture. The Chile Exploration Co., an American corporation, operates the enterprise.

the present year indicate a still larger copper production. During the last three years the United States produced, respectively, in metric tons, 646,212; 881,237; and 856,570; Chile for the same period, 47,142; 64,636; 75,343; Peru, 32,410; 41,625; 45,620; Mexico, 30,969; 55,128; 43,827.

In the United States, if not in the world, the most marvelous copper-producing region is in the State of Arizona. In 1916 the total output of that State increased 50 per cent over the amount of the previous year, or gave a production of 693,000,000 pounds; and with the high prices prevailing last year Arizona operators realized nearly $190,000,000 from the State's copper mines. The largest single producing company there started operations in 1915 and has been increasing its several units at intervals until at last reports there were approximately 14,000 tons of ore produced and treated daily; and the low cost of 8.67 cents per pound copper was the result, while the ore averaged only 1.55 per cent copper.

Raw ores naturally vary greatly in richness of copper content, but at present low-grade ores of 2 per cent or even lower are profitably mined. Purity of finished product also widely differs, and quality in manufacture is based upon the usage to which the copper is destined. For many purposes copper must be in a rather high degree of purity. According to the Journal of the Institute of Metals, the "British specifications" for certain quantities call for 99.25 per cent pure copper. In the United States, Government requirements specify that "commercial brass" must contain 64 to 68 per cent copper; "gun bronze" must be made of 87 to 89 per cent copper; "cast naval brass" requires a copper percentage of from 59 to 63 per cent, etc., while for many other purposes purer copper is demanded.

Long and interesting volumes have been written about the several methods of changing raw copper ore into the copper of commerce, an industry that requires the brains and practical skill of some of the world's ablest engineers and experts, plus millions of dollars capital.

At Chuquicamata, Chile, lies probably the largest copper deposit of the world, which is in the form of an enormous mountain peak, or indeed several peaks. Instead of delving into the bowels of the earth for the ore, it is only necessary to blast away portion by portion and scoop up the shattered earth with giant steam shovels. A modern railroad about a mile long is used to convey the ore to reduction plants; and as scientists have figured that there are more than 400,000,000 tons of "proved" ore available, the outlook is especially promising in point of supply. The "wet" extraction method was decided upon after the promoters, the Chile Exploration Co., acquired the properties a few years ago. In view of the vast deposits there it may be of interest to glance at the methods being followed which may soon fulfill the dreams of the promoters in making it the world's largest copper-producing plant. Electricity plays a prominent part

SCENES AT CERRO DE PASCO, PERU.

The investment of more than $23,000,000 in the Peruvian highlands 14,000 feet above sea level has been termed the "most spectacular investment in a mining enterprise in the history of the world." The Cerro de Pasco Co., an American corporation, acquired copper and other mineral areas of about 12,000 acres and have spared no expense in placing thereon every facility for mining on a vast scale. A hydroelectric plant costing a million dollars was built near Oroyoand 43,000-volt transmission lines radiate to various operations, being one of the world's highest electrical power plants. Upper picture: The stone office building and quarters for officials at Cerro de Pasco. Center: General view of one of the mining camps, showing laborers' quarters on left. Lower: The town of Cerro de Pasco, 14,500 feet above sea level. This town and the shipping port at Callao are connected by the world's highest standard gauge railroad, being 15,865 feet altitude at one point.

OTHER VIEWS OF MINING ACTIVITY IN THE CERRO DE PASCO REGION OF PERU.

Upper: In the foreground we have a group of burden bearers typical of the high Andes. In ancient mining operations the llama was always an important beast in transporting minerals to market, and is used to a considerable extent to-day. In the background stands the general office building of the Cerro de Pasco Co. Lower: In the buildings on the left of the picture are saw mills, shops, etc. The small building under construction is one of the ore bins. In connection with its activities the company operates miles of railways, coal mines, smelters, etc., and produces gold and silver in addition to the principal mineral, copper.

in the gigantic enterprise. The power station is located at Tocopilla, on the coast, and the electric current passes nearly 100 miles inland to the plant and mines. To quote from one of the company's attachés who showed the writer about the plant and explained the modus operandi:

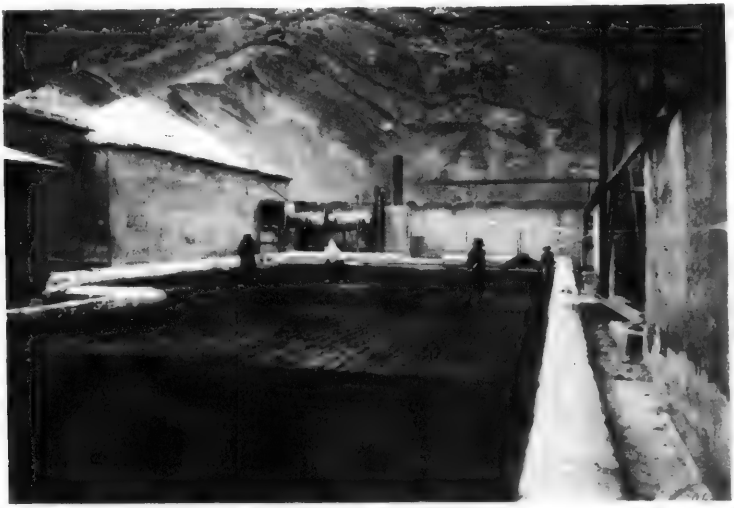
The ore is mined by steam shovels of the type and size of those used in digging the Panama Canal, and is loaded into dump cars of 60 tons capacity, which carry it to the ore bins. From the bins the ore is fed onto conveyor belts running to the breaker house, where two huge gyratories break up the rock and drop it onto another belt conveyor, which takes it to the crusher house. At this point it goes first through the McCully crusher and then past roll crushers, which very nearly pulverize it. It is then carried through a sampling plant, and again by conveyors to a discharging bridge which travels along the huge leaching vats, tripping the ore from the conveyor belt into whichever vat is prepared to receive it. Here it undergoes the leaching process, which consists of treating the ore with the dilute sulphuric acid, dissolving the copper into solution. The treatment of the ore with the acid lasts about 48 hours, at the end of which time the solution, which now contains the dissolved copper, is drained out of the vat through lead-lined pipe and pumped to the dechlorinating plant.

The residue or tailings remaining in the vats is picked up by another bridge and bucket, dumped onto another conveyor, and distributed on the tailings dump, the vats being then ready for another charge of ore.

In the dechlorinating plant the solution containing the copper is run through huge revolving drums filled with copper shot, by which process the chlorine is taken out, and the sulphate of copper solution remaining is again pumped through lead-lined pipe into the electrolytic tank house, where it is run into small tanks into which are suspended rows of cathodes and anodes. Electricity is passed through the tank, causing electrolysis of the solution, and the copper collects as a coating on the magnetite anodes. The anodes are then lifted out and carried by an industrial railway to the melting plant, where the copper is melted and run into molds for the commercial market.

In 1917 the amount of copper produced is given at 89,022,126 pounds, which cost per pound 13.2 cents. For the previous year the per pound cost was 18.55 cents, a figure which indicates that as the great enterprise settles down to steady work the production cost will be still lessened and dividends provided for stockholders. Chuquicamata's first output under the new régime was shipped the latter part of 1915, and by the following year the copper arrived in the seaports of Antofagasta and Mejillones in quantities.

The richness of copper deposits, the location, the nature of the country, and many other factors enter into successful copper production. Generally speaking, copper ore occurs in veins, in bedded deposits, and in irregular lenticular masses, say the mineralogists, and the methods of working and extracting the metal must be fitted to the particular case. At the mines and at the reduction plants there is a vast amount of waste material that is at first taken from the mass of ore, and this preliminary treatment is called concentration. In the past, and to some extent to-day, "hand picking," or rejecting certain nonpromising ores, is practiced. In Bolivia, for instance, where Indian labor is comparatively cheap, there has been



TWO PHASES OF COPPER PRODUCTION AT THE FAMOUS COROCORO MINES IN BOLIVIA.

Upper: Open copper workings and stalwart native laborers who have become very proficient in the use of electrical drills now largely used in mining operations in Bolivia. In the Corocoro region much copper is found in the so-called "pure" state. Lower: Drying copper ore at one of the Corocoro mines. In this process as well as in sorting ores native women have become expert assistants.

TWO GENERAL VIEWS OF THE OPERATIONS OF THE

This is one of the most gigantic enterprises which United States capital is fostering in South America. The location of the plant copper" which is being eaten away by large steam shovels is one of the largest, if not the largest, deposits of this mineral

CHILE EXPLORATION COMPANY, CHUQUICAMATA, CHILE.

and mines is about 100 mi'es inland from the port of Antofagasta, Chile, and near the town of Ca'ama. The "mountain of in the world. Millions of dollars have already been expended here and the company is gradually enlarging its operations.

GENERAL VIEW OF THE BRADEN COPPER CO.'S OPERATIONS NEAR RANCAGUA, CHILE.

Within the last few years this American corporation, with millions of dollars capital, has been actively working mining properties about 45 miles eastward of Rancagua, a 2-foot 6-inch gauge railroad connecting the mines with Rancagua. The company employs about 2,000 men and produces annually about 36,000,000 pounds of copper, from an ore averaging 2½ per cent copper content. The ore reserve is estimated at something like 100,000,000 tons. The company employs several hundred trained specialists and others from the United States and also a sprinkling of Europeans. The view gives one a fair idea of the actual operations and the many buildings constructed by the company.

developed quite an army of women "sorters" of ores whose critical eyes, skilled hands, and hammers eliminate the further examination of nonvaluable ores at the plants.

In 1914 the Government of Bolivia withdrew the 25 per cent export duty on nonconcentrated copper ores. This fact, as well as the rising value of copper, gave a new impulse to the industry, and each recent year shows a large increase in production. In 1914, 8,667 metric tons (ore and barrilla) were exported; the 1915 returns showed 23,813 tons, and in 1916 the exportations reached 29,000 tons. One of the noticeable features of Bolivian growth, as elsewhere, is the large number of small producers who have contributed to the total output, and also to the increased North American capital which is operating some of the most important copper properties. Lack of adequate shipping facilities on the Arica-La Paz Railroad was a serious handicap to greater production—the copper could not be transported to the coast as fast as mined. This road traverses one of the world's richest copper regions and a branch line connects it with the famous Corocoro district.

High wages earned by the mine laborer is naturally the outcome of prosperity of the principal or the working corporation. In the Americas the dividends to copper mine shareholders have been unusually large. As a typical example of copper-mining prosperity we have the operations of the leading company in Peru. In 1917, according to a public statement, this company paid a dividend of $11 per share, or made something like $9,000,000 after paying all taxes to the Peruvian Government, operating expenses, etc. To quote one of the company's directors as reported in Peruvian journals: "We had the best year in our history, and the outlook is satisfactory. We have plenty of cash, plenty of copper, and are not worrying about the future." Production of copper by this one company averaged 6,054,000 pounds per month in 1917, or a trifle more than the monthly yield in the previous year.

In Mexico the State of Sonora supplied the greater amount of copper in 1916. The following year the output of the whole Republic slightly decreased, owing largely to labor conditions, lack of facilities for marketing the product, etc. During the last normal year (1913) the value of copper ore and copper shipped from Mexico to other countries amounted to more than $18,000,000, yet, copper ranks as the third of importance of Mexican mineral exports, silver and gold, respectively, being the leading minerals exported. Mexico is credited with having about $647,000,000 of foreign capital devoted to mineral industries, of which about $500,000,000 comes from the United States; $87,000,000 from Great Britain, $30,000,000 from Mexican citizens, and $10,000,000 from France. The cost of producing copper in Mexico in 1916, including all export taxes and other costs, averaged

about 13 cents per pound—from 2½ to 3 cents per pound representing taxes, etc.

The copper deposits of northern Chile appear to extend eastward through the Andes into the Argentine Provinces of Catamarca, La Rioja, etc., and prior to 1913 were under active exploitation. Various companies with capital running into several millions of dollars (Famatina Development Corporation, etc.) were organized and took over certain properties that had been previously worked on a small scale. According to Revista Financiera, Buenos Aires (Mar. 25, 1916), the Famatina Co. (capital £800,000) harnessed the Oro River with electrical machinery and obtained large amounts of ore of the grade of 2.56 per cent copper, 0.457 ounce gold, and 10.92 ounces silver per ton. The San Pedro mines gave a much higher percentage of copper content. The excessive cost and long transportation of necessary coal, however, appears to have been one of the checks to profitable development; about this time the great war broke in Europe and interfered with the capital and shipping facilities which had been largely drawn from Great Britain, so work was temporarily abandoned but not from a shortage of high-grade ore. The prolongation of the Argentine Northern Railroad to Chilecito, and a cable road still farther to La Mejicana, greatly aided the mining companies to transport ores and supplies; and no doubt within a few years the extension of this Government railway and its various branches to other parts of the mining region will be followed by more extensive mining than Argentina has hitherto experienced; also the further development of oil-bearing lands in both southern as well as in northwestern Argentina has a bearing on copper exploitation.

Cuba is another one of the Latin American countries which is sending considerable quantities of copper to the manufacturing world. The most important mines are operated near Santiago. Including copper, iron, and gold, the export figures given in value for the last three fiscal years range from $3,798,000 to $12,039,000, each year showing a greater output. Of copper alone the 1917 figures show the largest amount, there having been produced 9,622 metric tons, against 7,816 tons for the previous year.

In recent years practically all of the copper ore mined in Venezuela has found a market in the United States. This production, figured in values, amounted to 1,094,000 bolivars (bolivar equals 19.3 U. S. currency) in 1915 and to 1,805,065 bolivars in 1916; while the figures of last year will probably show a still more important output. With the increasing demand for copper, the high prices, and the comparatively short ocean transportation route to the United States, it seems probable that the capitalist will turn to this new and inviting field of copper deposits, which evidently has scarcely been scratched.

Courtesy of Underwood & Underwood.

FINISHED PLATE COPPER AT AN ARIZONA SMELTING PLANT.

Fourteen thousand tons are represented in the picture, and this rough copper is sufficiently pure for many purposes. In recent years this one State alone increased its copper output 50 per cent, while the value of copper has risen to such prices that Arizona realized from all of her mines a sum approximating $190,000,000 in 1917. About 62 per cent of the world's copper output comes from the United States, various Western States being the greatest producers.

Courtesy of Underwood & Underwood, New York.

WITHIN A GREAT COPPER PLANT IN ARIZONA.

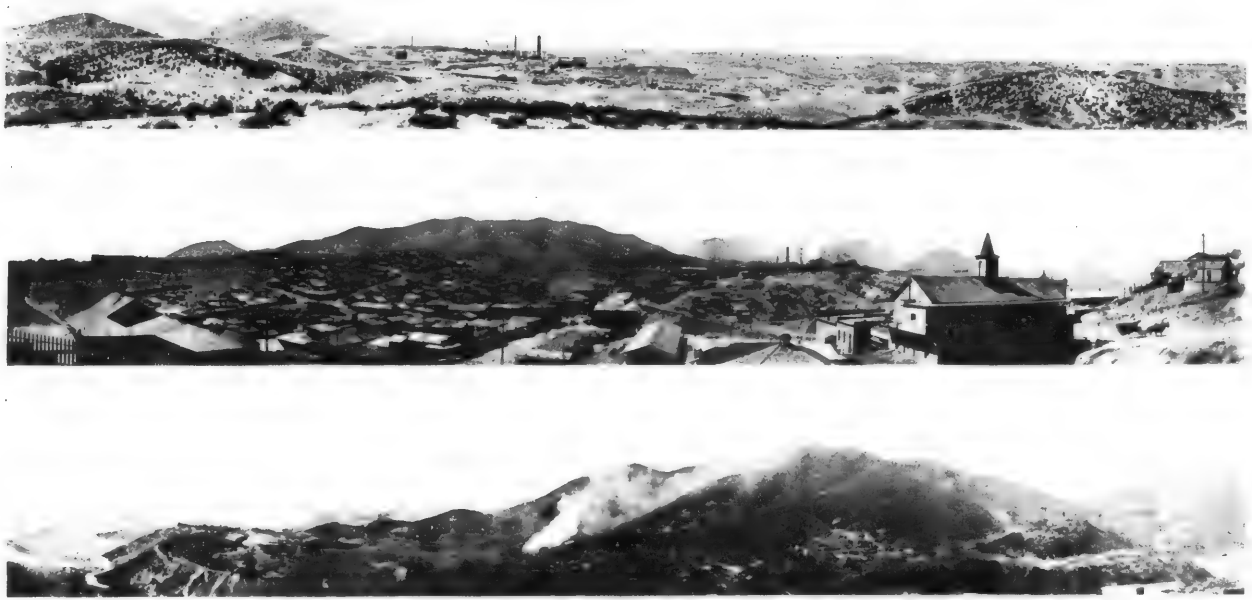
The workmen are here engaged in taking sheets of pure copper from refining tanks. "Electrolysis," the industrial chemists tell us, "consists of putting impure copper into tanks of blue vitriol and sulphuric acid, attaching thin sheets of pure metal to positive electrodes, and turning on strong current. The current dissolves the mass at the negative electrodes and the pure copper is drawn to the positive, the same as in electroplating, and the impurities sink to the bottom of the tank."

In Central American countries copper deposits are known to exist and in sufficient quantities and grades to be worked to commercial profit; but in most cases the lack of modern transportation facilities has handicapped operations. The more precious metals of gold and silver are extensively mined and have returned handsome profits to the operating companies. In some cases, it is to be noted, copper ores have formed portions of Central American mineral exports, but in statistical returns of the several countries copper production has not been segregated from other minerals; hence the statistics usually cover various ores and concentrates as a whole.

Great demand, high prices, and larger profits are the underlying factors that have spurred the multitude of copper mining companies to the enormous output as indicated by the figures quoted. A well-known authority (Weed) states the demand as "insistent and incessant in both war and arts." Such demands naturally have caused prices to rise, and not for half a century have they reached the level of the last year or two. In the early months of 1916 the price of a pound of copper ranged from 22½ cents to 25¼ cents, and by May the selling rate reached 33 cents; still later, copper brought about 35 cents per pound, but by the end of 1917 a decline was to be noted. In some cases vast amounts of copper have been contracted for by European interests, one case in point involving 200,000 tons, or nearly one-fourth of the amount produced in a year in the United States.

In speaking of copper mining in the United States prior to the war it was estimated that 10 cents per pound was the average cost of producing a pound of copper; a few cases showed that the cost could be reduced to 7 cents per pound. The estimates further showed that about 50 per cent was to be added to the first cost before the metal reached the consumer. With the rapid rise in the price of copper and the increased cost of production the above figures do not of course hold true, but they nevertheless throw light on what has been accomplished in this country in normal times by combining vast capital and the most approved machinery and conducting operations on a large scale. In the United States four general classes of copper are listed on the market: Lake, electrolytic, pig, and casting.

Large profits to the producers of copper are reflected in the general prosperity of most of the mining regions of the Americas. The call for a far greater number of mine laborers was in many cases satisfactorily answered, and wages have risen to a surprising scale. In the region of Bisbee, Ariz., for illustration, miners have been receiving $6 or even more for each shift or working period. While the miner and laborer in the United States seem to have the advantage over their fellow workmen in other countries, there is to be noted a gradual rise in the pay of miners in all Andean lands and in other parts of the world.

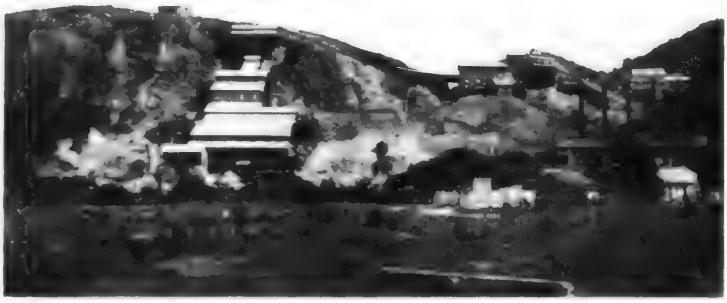


GLIMPSES OF COPPER MINING IN MEXICO.

Upper: General view of the country near Cananea, Sonora, showing the smelter of the Cananea Consolidated Copper Co. Center: Another view of the same company's operations; homes of the workmen are shown on the left. Lower: Still another picture of operations, the smelter being distinguished by the tall smokestacks. On the right of the picture are to be seen several mining villages.

VENEZUELAN COPPER MINING ACTIVITIES.

These mines located in Aroa, State of Lara, are worked by the South American Copper Syndicate, and in the upper picture is shown the method of transporting the mineral from the mines. The lower picture illustrates another phase of copper loading and transportation.



COPPER PRODUCTION IN CUBA.

Near Santiago copper development has become an important business. The pictures above represent two phases of activity of the Cuba Copper Company, which has been shipping copper to the United States in growing quantities.

The future call for copper may be greater than in the past. Four years of strife have seen the loss of vast quantities of copper beneath the seas, which will never be recovered; on land the destruction of cities, hamlets, and villages has also carried with it the loss of countless articles composed largely of copper. In the rebuilding of the nations, stupendous enterprises that may not be especially rapid, the demand for copper and its products will undoubtedly be large. The abundance of the mineral in the fields of the New World, from Alaska in the north to southern South America, is said to be ample to supply the world for many years or to be even inexhaustible. Labor in the Americas may be higher than in oriental or European lands, but the vast improvements in mine development and the activities conducted on gigantic scales seem to dwarf competition from parts of the world less favored by nature and where man power must be largely depended upon to accomplish that which in the New World is done by machinery.

QUINOA, A SOUTH AMERICAN CEREAL[1]

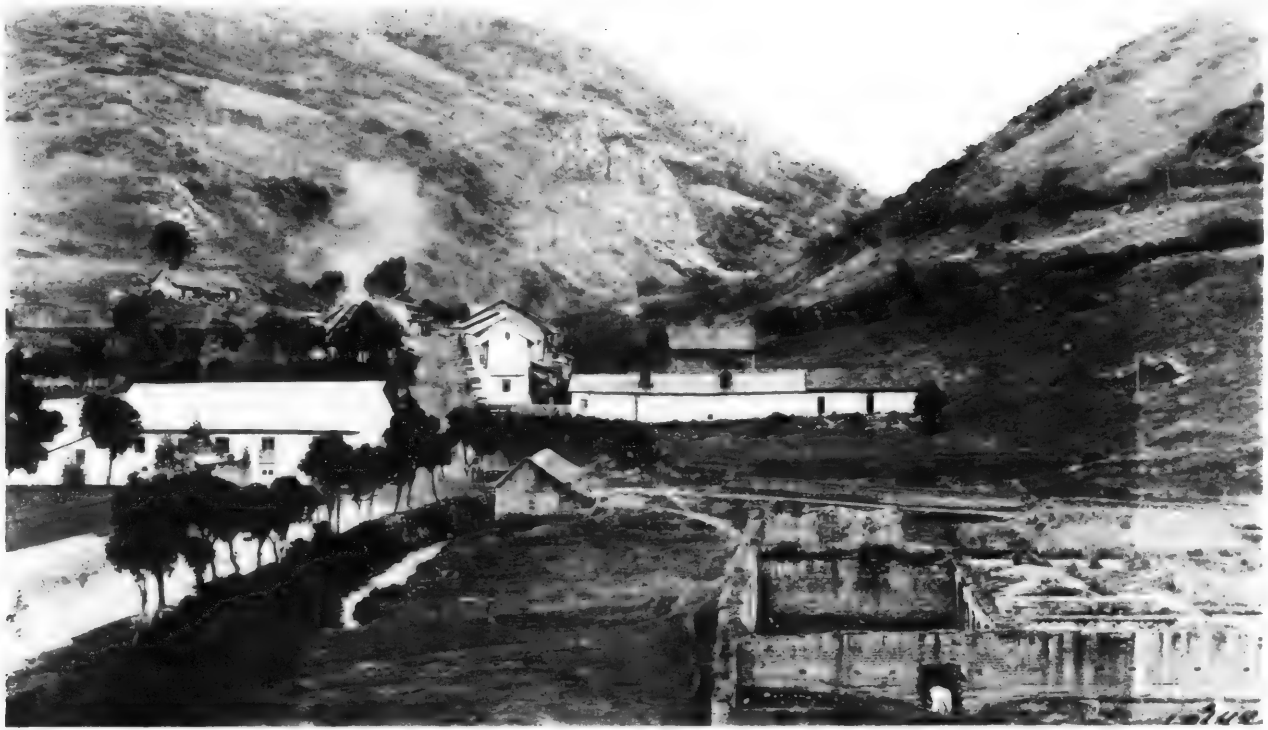
IF we stop to consider the origin of the leading food products of the world, it is surprising how many we can find that were indigenous to the Americas and were utilized by the aborigines thereof centuries before the discovery of America gave them to the remainder of the world. Of these, such products as maize (Indian corn), potatoes (both Irish, or white, and sweet), cacao (chocolate), the tomato, pineapple, mandioca, etc., have become known practically throughout the civilized world, and some, through more or less scientific cultivation and selection, have been developed far beyond the state of cultivation attained during the centuries preceding the advent of the white man in the Western World. How it happens that the white man has taken so kindly to some of these and spread their use all over the world, while others have been almost entirely neglected, is something of a mystery. Indian corn, as food for man and beast, has become the greatest food product of the civilized world and to-day surpasses wheat in the quantity raised and in the area used for its cultivation; the potato has assumed a tremendous importance—an importance that is accentuated just now by the European war; the tomato has been adopted and improved by the white man until its luscious meat is now refreshing millions of human beings in almost

[1] By Edward Albes, of Pan American Union Staff.

Photo by W. V. Alford.

A VIEW OF SOME OF THE HIGHEST AGRICULTURAL LANDS IN THE WORLD.

Typical fields on the slopes of the Andes, at an elevation of over 14,000 feet, where only quinoa and potatoes are grown. It is in areas such as these, where the temperature is too low for the successful growing of maize, that quinoa is the principal food crop.



THE TOWN OF QUINOA, PERU.

This picturesque little village is located in the heart of the Andes, at an elevation of about 11,000 feet, where quinoa thrives. Presumably the town was named for the plant which has provided food for the inhabitants of the region for many hundreds of years.

every known quarter of the globe, for where the fruit itself can not be grown the canned product has found its way. These are merely examples of results obtained through proper attention to food products which primarily may have had but small value in the world's economy.

On the other hand, there are food products that occupied prominent places in the primitive domestic economy of the aboriginal Americans, both North and South, which have been almost completely ignored by our modern alimentary experts, and as a consequence have been neither improved nor utilized to any considerable extent. The wild rice of the North American Indians is one case in point, but a still more important instance is that of the grain indigenous to the west coast of South America known as quinoa, sometimes spelled quinua. For many centuries prior to the advent of the Spaniards this grain formed one of the staple food products of the original inhabitants of the elevated sections of Peru, Bolivia, Ecuador, and Chile. In its value as a food it was in their estimation second only to maize, and while it could not compete with the latter in the warmer sections, in the higher and colder regions, where the greater cereal could not be cultivated successfully, quinoa was the main food resource of the natives.

In this connection the Inca Garcilaso de la Vega in his "Comentarios Reales de los Incas," written during the last decade of the sixteenth century and published for the first time in 1609, after dealing at greater length with the more important cereal of his native land, maize, writes of quinoa as follows:

> The second place among the cereals which are grown on the surface of the earth is given to what they call *quinua* and the Spaniards call *small rice*, because in the grain and color it resembles it. The plant on which it grows resembles much the wild amaranth (bledo), as much in the stem as in the leaf and head in which the quinoa seed grows. The tender leaves are eaten by the Indians and also by the Spaniards in their soups and stews, for they are very palatable and healthy. Also they eat the grain in their broths and potages, made in many ways. Of the grain the Indians also make a beverage to drink, as they do of maize, but only in the parts where maize fails to grow. The Indian doctors use the flour of quinoa in some cases of sickness. In the year 1590 some of the seeds were sent to me from Peru, but, although sown at various times, none came up.

The Inca Garcilaso de la Vega seems, therefore, to have been the first to attempt to grow quinoa in Europe, as well as the first to give a published account of the cereal and its uses. In 1725 it was introduced into France by Père Feuillée, but again without success. Antonio de Ulloa, one of the Spanish officers who accompanied the famous French expedition under La Condamine in 1735 to measure the arc of the meridian on the plain of Quito, gives a detailed description of quinoa in his "Relacion Historica del Viaje a la America Meridional," while, to come down to more recent times, De Candolle,

WHERE THE QUINOA GROWS.

Top: Balsas, or reed boats, some of which are made on a much larger scale than those shown in the picture, have served for centuries to transport the grain of the quinoa plant from one shore to the other of Lake Titicaca, the highest extensive sheet of water in the world. Situated in the Andes, between Peru and Bolivia, at an altitude of over 12,500 feet, it is in the heart of the region where the quinoa thrives. Bottom: View of the island of Koati, sometimes called the island of the Moon, which is one of the islands in Lake Titicaca on which quinoa was cultivated even in pre-Incaic times.

Illustrations from the Boletin de la Sociedad Geografica of La Paz.

THE QUINOA PLANT.

On the left is shown the entire plant; on the right a flowering branch. The stem is erect, stout, furrowed, and grows from 2 to 5 feet high, as a rule, though specimens grown for forage purposes have been known to reach a height of 10 feet. The flowers are small and green, growing in dense axillary and terminal farinose clusters arranged in panicles. The natives who grow quinoa make use of the stems and coarsest leaves by reducing them to ashes and utilizing this alkaline substance to give piquancy to the taste of the coca leaves, habitually chewed by them for their stimulating properties.

in his "Origin of Cultivated Plants" (1882), gives the following account:

> The quinoa was a staple food of the natives of New Granada, Peru, and Chile, in the high and temperate parts at the time of the conquest. Its cultivation has persisted in these countries from custom and on account of the abundance of the product.
>
> From all time the distinction has existed between the quinoa with colored leaves and the quinoa with green leaves and white seed. The latter was regarded by Moquin as a variety of a little known species, believed to be Asiatic; but I believe that I showed conclusively that the two American quinoas are two varieties, probably very ancient, of a single species. The less colored, which is also the most farinaceous, is probably derived from the other.
>
> The white quinoa yields a grain which is much esteemed at Lima, according to information furnished by the Botanical Magazine. The leaves may be dressed in the same manner as spinach. * * * No botanist has mentioned the quinoa as wild or semiwild. The most recent and complete work on one of the countries where the species is cultivated, the *Flora of Chile*, by Cl. Gay, speaks of it only as a cultivated plant. Père Feuillée and Humboldt said the same for Peru and New Granada.

Quinoa, therefore, is not a recent discovery, but its cultivation and use is still restricted to the small portion of the earth to which it seems to be indigenous, while Indian corn has spread almost over the entire temperate as well as tropical world. In the light of recent experience, however, when the question of substitutes for wheat and other food products has become so important, it would seem that our scientific agriculturists might well give more thought to the matter of its introduction into North America and Europe. The Office of Foreign Seed and Plant Introduction of the United States Department of Agriculture has imported several lots of the seed and the department is now making experiments with quinoa and allied species of *Chenopodium*, and it is to be hoped that suitable areas will be found where soil and climatic conditions will make it a profitable crop.

As to the use of quinoa by the Indians of Peru, Bolivia, and Ecuador, from their earliest traditions it seems that the grain played an important rôle. Upon harvesting the crop a certain portion was dedicated to their chief deity, the sun, and was stored in 12 great silver jars in the "House of Gold;" another portion, preserved in great storerooms, was kept for the use of the army when sent out on long marches and on campaigns in the interior; the remainder was then divided among the people in accordance with their necessities.

Botanically the plant is known as *Chenopodium quinoa*, and is allied to the common pigweed (*Chenopodium album*). The name *Chenopodium* is derived from the Greek word meaning "goosefoot" because of the resemblance in shape of the leaves to the foot of a goose. There are some 60 or more species of the family, quinoa being perhaps the most useful. The technical description is as follows: Erect, stout stem, furrowed, and 4 to 5 feet high; leaves, triangular-ovate, sinuate, long-petioled, angulate-pinnatifid, glau-

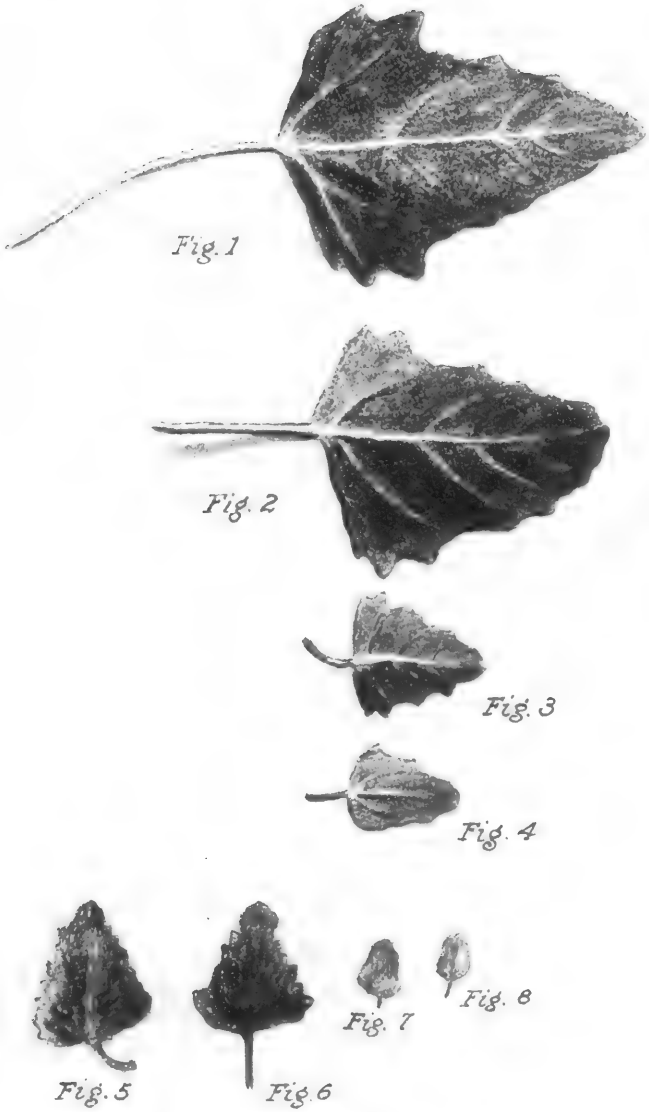


Illustration from the Boletín de la Sociedad Geográfica of La Paz

LEAVES OF THREE SPECIES OF QUINOA.

Counting from the top down, the first and second leaves are from the white quinoa, cultivated for its edible grain; the third and fourth are from the yellow variety of quinoa; and the two in the lower left corner are from the red. The two very small leaves shown are from a young plant. When young and tender the leaves are much like spinach, and are generally used to flavor soups and stews.

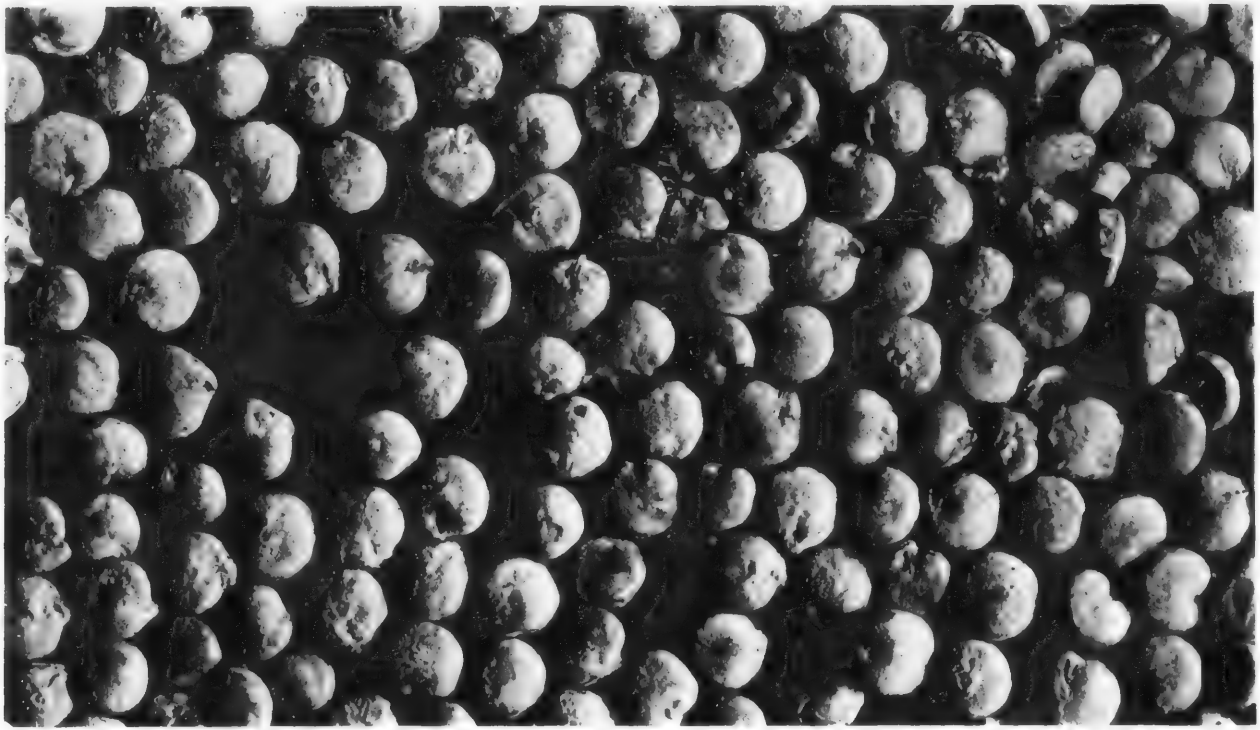
cous; flowers, small and green, in dense axillary and terminal farinose clusters arranged in panicles; seeds, very large. Habitat, western slope of the Andes. The plant was first classified and scientifically described by Louis Christian Willdenow, the German botanist.

According to Ramon González, of La Paz, Bolivia, who has recently made a study of quinoa, there are four constant varieties or types of the white species, which differ chiefly in the size of the head and consequent amount of grain or seed, the smallest grain being about the size of a mustard seed. The seed of the colored variety is very bitter and of little value for food purposes.

The plant is exceedingly hardy and thrives in the cold regions of the Andes at an elevation of 3,500 meters (11,480 feet). The stalk grows generally from 2 to 6 feet in height, although instances have been known where plants specially grown for forage purposes have reached a height of nearly 10 feet. The leaves, which have been described above, when young and tender are much like spinach and are frequently used to flavor soups and stews. Another use of the plant is to reduce the stems and coarsest leaves to ashes, and this alkaline substance is used by the natives to give piquancy to the taste of the coca leaves which, when chewed, have great stimulating properties.

The chief use of the grain among the natives that grow it is to make a sort of bread or biscuit of the flour. The process of making the flour is as simple and primitive to-day as it was during the times of the Incas. The grain is first cleaned and washed; the husk or pericarp is then removed by a process of rubbing and grinding; the seeds are then dried and separated from the chaff and ground to flour between two stones, one having a flat, smooth surface while the other is somewhat rounded like a pestle. To make the bread or biscuit the flour is first mixed with water made slightly alkaline to neutralize the naturally bitter taste of the seeds; the dough is then molded into rounded cakes or biscuits and baked. When the dough is made up with a little lard, milk, or the yellow of an egg, the bread is very palatable and forms a nourishing food. The biscuits made by the natives will keep indefinitely and take the place of "hardtack" or ship's biscuits. When the Incas sent their troops on long expeditions and forays into the interior quinoa biscuits formed their chief food, and even to-day they are used for the same purpose by the native troops of the countries where the product grows.

The grain is also used whole, just as is rice, for making porridges, soups, etc., and it may be cooked and served in the same manner as oatmeal. Again, after it is steamed and cooked, it may be spread out in a tray or pan, about an inch deep, and browned in an oven. It then becomes a very good substitute for bread, much as is the corn "pone" in the Southern States of the United States.



Courtesy of William Edwin Safford, Economic Botanist, United States Department of Agriculture.

GRAINS OF QUINOA MAGNIFIED SIX DIAMETERS.

The chief use of the grain among the natives that grow it is to make a bread or biscuit of the flour, which is made as follows: After the grain has been cleaned and washed the husk is removed by a process of parching and then rubbing—usually by means of treading. The seeds are then repeatedly washed and after being dried are ground to flour between two smooth-surfaced stones. To make the bread the flour is mixed with water (made slightly alkaline or salty to neutralize the naturally bitter taste), and the dough is molded into biscuits or small loaves and baked. When the dough is made up with lard, milk, or the yolk of an egg, the bread is a very palatable and nourishing food. The grain is also used whole, much as is rice, for making porridge, stews, and soups, and it may also be prepared and eaten as is oatmeal.

The chemical analysis of the quinoa grain, according to Voelker, is as follows:

Fecula (starchy matter)	38.72
Sugar	5.12
Gum	3.94
Fats	4.81
Casein and albumens	7.47
Gluten	11.71
Woody fiber	7.90
Mineral compounds	4.32
Water	16.01
Total	100.00

A somewhat different analysis, made by Ramón Gonzalez, is as follows:

Mineral matter:	
Water	12.504
Ash	5.436
Silica	1.48
Phosphoric anhydride	1.05
Calcium oxide	3.01
Iron oxide	1.87
Magnesium oxide	11.58
Potassium	38.86
Organic matter:	
Starch	52.82
Cellulose	12.205
Albuminous matter	13.125
Isolated principle	Saponin

Quinoa is still being cultivated in the countries to which it is indigenous in much the same primitive manner employed by the Indians when the Spaniards conquered the Incas. The surface of the ground is scratched over with a rude substitute for a plow, and the seed scattered broadcast and lightly covered with a layer of the soil. In places where the soil is suitable and the seeds have been properly covered the plants come up well; in other spots they fail. No careful or scientific culture is attempted, nor has there been any attempt at seed selection or other modern methods of improving the product. If one considers the tremendous improvement over the small-grained and small-sized ear of Indian corn that we see in the compactly grained and huge ear of modern field corn, it is only reasonable to surmise that similar methods of culture and scientific experiment applied to quinoa may produce results fully as wonderful. The world is clamoring for additions to its cereal foods, especially for some product that can be used as a substitute for wheat and one from which real bread can be made. It is the gluten in wheat flour that enables the action of leaven to convert an otherwise unpalatable substance into the most popular and most generally used food in the civilized world. Quinoa flour, according to Voelker's analysis, has a large gluten content. Who knows but that experiment will prove quinoa flour a better substitute for wheat flour than has yet been found among the better known grains?

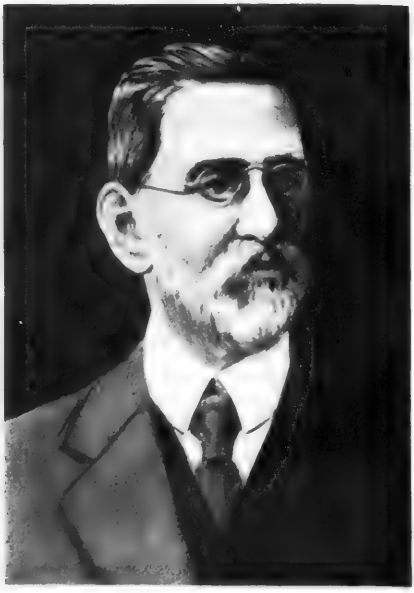
PROMINENT IN PAN AMERICAN AFFAIRS

DON MARCIAL MARTINEZ, the patriarch of Chilean diplomats, died in Santiago February 8, 1918. For many years the eminent jurist and diplomat had been a loved and venerated figure in the Chilean capital. He was known far and wide for his achievements in science, letters, diplomacy, and jurisprudence, and that not only in his own country but in the other American Republics and in Europe. His was a long, useful, and almost ideal life, filled with achievement and success, crowned by the grateful acknowledgments of a great nation. Something less than five years ago the famous Society of Santiago paid him an unprecedented tribute by holding a special concourse to celebrate his eightieth birthday, and it was upon this occasion that the grand old octogenarian delivered an address which showed all the fire, originality, learning, and wit of his youthful days. Don Marcial, as he was lovingly called by the people of Santiago, was a distinguished graduate of the Institute of La Serena, where he had specialized in the sciences and in jurisprudence, and it was his thorough knowledge of the latter and his training in international law that stood him in such good stead in his years of diplomatic activity. He had already established a reputation as a jurist, first as a member of the Court of Appeals and then of the Supreme Court of his country, when he began his diplomatic career during the critical period of his country's history, when, jointly with Peru, Chile became involved in a war with Spain in 1865. It was largely through the skillful diplomacy of Don Marcial Martinez, sent as minister plenipotentiary to Peru, that the alliance between the two countries was brought about—an alliance which was subsequently strengthened by the adherence thereto of the other three Pacific coast countries and Venezuela. In 1880 he was sent as envoy extraordinary and minister plenipotentiary to the United States, where he added fresh laurels to his reputation as a skillful diplomat. Later he was made minister plenipotentiary of Chile to Great Britain, where he again met with his accustomed success, adding to the prestige of his country as well as to his own fame. In his later years, although retired from active political life by his advancing age, his interest in public affairs never waned and his ripe experience and sound judgment gave him a unique position as a counselor and adviser, a Nestor of Chilean politics and diplomacy. Loved, honored, and respected throughout his life, an entire nation mourned on the day he died.

Dr. ADOLFO E. DÁVILA, editor in chief of La Prensa of Buenos Aires and one of the greatest journalists of South America, died in Buenos Aires April 1, 1918. For nearly 50 years the great editor had been a power not only in the capital of the Argentine Republic and in the nation, but throughout all of Latin America as well, for he had been a director and editor of La Prensa from the first issue in October, 1869, to the day of his death. The destiny of a nation depends chiefly upon the thought and sentiment of its people, and the greatest factor in molding that thought and sentiment in modern times is the public press. In every civilized country on earth the influence of the newspaper is great, but in the countries of Latin America it is more than that—it is dominant. Through the daily press the leaders of thought and action in every line of human endeavor find expression, and the opinions of the average man of intelligence are almost invariably but the reflections of those of his favorite editorial writer. Thus La Prensa, ranking as one of the world's greatest newspapers, has served as a guide and mentor of the Argentine people for many years, wielding a power and influence so far-reaching and broad that it can not even be estimated. Fortunately that tremendous power has been directed by men of high ideals and of pure character, men like Dr. José C. Paz, the original founder and owner of the paper, and his associates; and foremost among them was Dr. Dávila. Starting while a mere youth of 20 with the first 2-page issue of La Prensa his pen helped to shape its destiny, and with it the destiny of his country, for 49 years. For perhaps a third of a century Dr. Dávila has been regarded as the great political and polemical writer of Argentina, and yet, with all of his great talent, keen intellect, and analytical mind, he was said to have been as gentle and as kindly as a child in all of his personal relations with his fellow men. As a writer he was fearless and untrammeled in the expression of his own opinions. His knowledge of men and affairs was so profound and his interest in everything which could possibly affect the welfare of his country so great that no important movement or public measure of any character was allowed to escape his keen analysis, and his trenchant pen often sealed the fate of municipal or national legislation by its approval or disapproval. In his death the nation has lost its kindly mentor, the people of Argentina one of their greatest defenders, and the world one of its noblest intellectuals.

MAJ. GEN. GEORGE WHITEFIELD DAVIS, United States Army, retired, formerly governor general of the Panama Canal Zone, and at one time envoy extraordinary and minister plenipotentiary of the United States on special mission to Guatemala, died at his apartments in Washington, D. C., Friday, July 12, 1918. Gen. Davis was born in the State of Connecticut July 26, 1839, and was educated at Nichols

MARCIAL MARTINEZ.



ADOLFO E. DÄVILA.

GEORGE WHITEFIELD DAVIS.

JOHN D. O'REAR.

Academy, Dudley, Mass., and at the State Normal School at New Britain, Conn. He enlisted as a private with the Connecticut Infantry in the Civil War, and had worked his way up to the rank of major by the time he was mustered out in 1865. His inclinations being along the line of military service, he reentered the Army, and in 1866 was commissioned captain in the Fourteenth United States Infantry; was promoted from time to time to the various intervening ranks until, in 1901, he became a brigadier general, and the following year was made a major general. From 1878 to 1885 he was assistant engineer in the construction of the famous Washington Monument—a work in which he took an absorbing interest and the successful completion of which was largely due to his persistent efforts. In 1899 he was sent as military governor to Porto Rico, and after about a year's service was transferred as provost marshal general to the Philippine Islands, some time thereafter being made commander of the Division of the Philippines. In 1903 he was retired from active military service by operation of the law of retirement, and thereafter served for three years in various official capacities under the Secretary of War. In 1904 he was made a member of the Isthmian Canal Commission and then governor of the Panama Canal Zone. In 1907 he was sent as envoy extraordinary and minister plenipotentiary on special mission to Guatemala, and again in 1913 as special agent of the United States to the Government of that country. From 1907 to 1915 Gen. Davis was chairman of the central committee of the American National Red Cross, and until his last illness took a leading part in the activities of that organization. He was a member of the American Society of International Law, the American Political Science Association, the Loyal Legion, and other similar organizations. He was also the author of a Military History of the Governments of Porto Rico and Manila and of a geneological work dealing with the Grow family of America.

John D. O'Rear, envoy extraordinary and minister plenipotentiary of the United States to Bolivia, died at La Paz July 14, 1918. Mr. O'Rear's entrance into the diplomatic field dates back only five years, and although young in the service he had already shown himself eminently qualified for this sphere of activity. His appointment to the post at La Paz was made June 26, 1913, and since his stay in Bolivia his work has been such that the relations between that country and the United States, always of the most cordial and friendly character, have been drawn even closer than they have been before. Unassuming in manner, earnest in his work, always affable and courteous in his demeanor, Mr. O'Rear made friends of all who came in contact with him. He was still comparatively a young man, having been born in Audrain County, State of Missouri, in 1870. After completing his literary studies in 1890 he studied law and was

Photo by Waite, Mexico City.

A NURSERY OF RUBBER TREES.

In Mexico plantations of rubber have been successful for a number of years, but consist chiefly of the *Castilloa elastica* species. The above photograph shows a nursery in which the plants are about 6 months old. In regard to the cultivation of the hevea, Mr. Fox writes: "The cultivation of hevea requires rather careful attention. Good drainage and loose soil are most important for the normal development of the trees, so that this culture is more expensive than that of the other varieties, but in a great measure compensation for the additional expense is to be had from the subcultures. * * * The hevea is a tree of comparatively rapid growth, and as such trees grow sapwood quite thick the tree is not so soon killed by tapping as slower growing trees."

admitted to the bar of his State in 1893. He forthwith began the active practice of his profession, continuing therein for 20 years, and accepting only such political offices as were in line therewith, such as city attorney of Mexico, Mo., and prosecuting attorney of Audrain County, etc. In 1913, however, he was drawn into the larger field of diplomacy, receiving from President Wilson his first appointment. His training as a lawyer gave him an excellent foundation for a successful career in the new field, and the five years of his service showed his qualifications to be such that but for his untimely death he would doubtless have achieved international renown as a diplomatist. In his death the United States loses a faithful and efficient servant, Bolivia a stanch friend, and Pan Americanism one of its valued adherents and promoters.

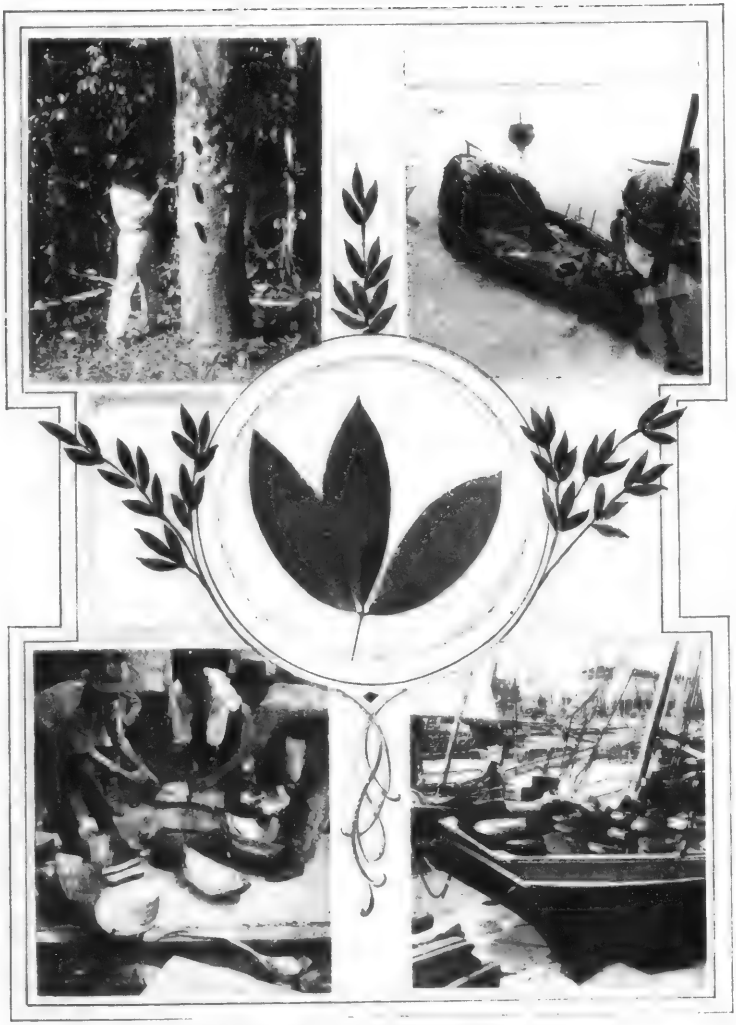
RUBBER CULTIVATION IN BRAZIL

The following notes on rubber cultivation, particularly of Hevea, in the States of Para and Maranhão, Brazil, have been prepared for the BULLETIN by Mr. Alvin Fox, horticulturist:

The cultivation of Hevea requires rather careful attention. Good drainage and loose soil are most important for the normal development of the trees, so that this culture is more expensive than that of the other varieties, but in a great measure compensation for the additional expense is to be had from the subcultures.

Hevea rubber, inland from the cities of Parnahyba and Maranhão in Brazil, practically always is planted with bananas. This underplanting not only does no harm to the plants, but has a very useful influence upon it. First, the young trees are protected from the burning sun and from the strong wind, while by the shading of the ground the expenses for weeding are considerably reduced and the soil feels less the disadvantages of the sun and the rain. Secondly, a great advantage of the planting of bananas is that profit is obtained from them after a year, whereas by planting alone, the trees, which even under the favorable conditions which exist in East Asia can only be tapped after three or four years, could not be tapped here until the expiration of a still longer period.

Coffee or cacao as well as bananas may be planted between the rubber. If bananas only are planted, they can be kept for about four years, but with coffee or cacao the bananas must be removed after



THE RUBBER INDUSTRY OF THE AMAZON.

Top: Left, tapping a rubber tree in the Amazon region; right, a boatload of rubber arriving at Para, Brazil. Center: Foliage of the *Hevea braziliensis*, the great rubber tree of Brazil. Bottom: Left, cutting the rubber "pelles" before grading and shipping; right, cargoes of rubber waiting to be unloaded at Para.

two or three years, otherwise their shade would hinder the other plants in their growth.

After the bananas have been cut down a profit can still be obtained for some years from the coffee or cacao, but probably the shade of 7 to 8 years old Hevea rubber trees would, in Brazil, prove too much for the coffee, so that this would no longer produce a harvest, and would have to be dug up. In all probability cacao would remain longer productive.

The planting can be laid out better with seeds or with "stumps." The young plants are kept in beds for nearly a year. Plants six months old are ready to be planted out as trees, but if they have remained in the beds from 9 to 12 months, "stumps" are made from them.

The fields where rubber is to be planted are drained in the ordinary way. After that has been done the ground is turned over and loosened. Sometimes only the plats where the rubber is to be planted are turned over.

After the planting out has been done, only regular cleaning and loosening of the upper layer of the soil is necessary, together with the proper upkeep of the drainage. For plantings of one year and upwards, draining to a depth of three feet is considered necessary.

Up to the present time no serious diseases have occurred among Hevea, only here and there has a leaf disease appeared, which, however, doesn't seem to have adversely affected the growth or the development of the Hevea rubber trees.

The Hevea is a tree of comparatively rapid growth, and as such trees grow sapwood quite thick the tree is not so soon killed by tapping as slower growing trees.

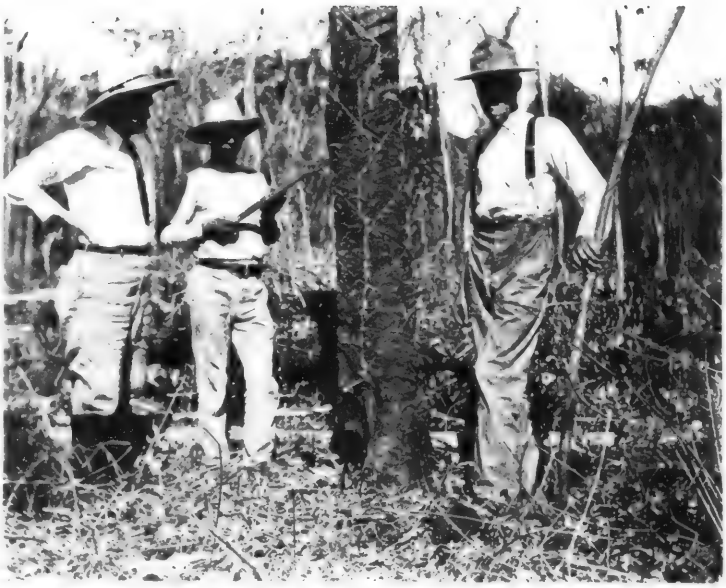
Both the herring-bone and the half-herring-bone systems of tapping have been evolved out of the original V tapping. With one V cut above another it was a natural thing to connect the channels so the one cup would prove sufficient to serve several cuts. In course of time the V cuts were widened, lengthened, and, being connected by channels, became a series of symmetrical broad V tapping. In order to interfere as little as possible with the circulation of plant food through the bark, the V cuts were so adjusted as to form the full-herring-bone system.

Still later, the full-herring-bone system being thought to be severe upon the trees and not allowing a sufficient time for bark renewal, the half-herring-bone system, at present in general use on so many plantations, was introduced. By this system only half the amount of bark is used up as under the full-herring-bone system. Such in few words is a brief résumé of the evolution of tapping methods up to the present time.

Courtesy of G. P. Putnam's Sons, New York.

BRANDING BALLS OF RUBBER ON THE BANKS OF THE AMAZON.

After the "seringueros," or rubber gatherers, have collected the latex from the trees the fluid is coagulated in successive layers on a stick held in a dense, acrid smoke, until a huge "pelle" or ball is formed. These balls of rubber, weighing from 100 to 150 pounds each, are then branded with the mark of the owner, collected in piles, and when enough to make a shipment have been collected are transported down the Amazon River to Para, the great rubber port of Brazil, where they are sold to the exporters, who in turn ship them overseas to rubber manufacturers in the United States and Europe.



THE PLANTATION RUBBER INDUSTRY IN CENTRAL AMERICA.

Upper: Tapping a rubber tree in Honduras, showing the herring-bone system of tapping in general use.
Lower: A group of rubber gatherers employed on a plantation in Hunduras.

THE RUBBER INDUSTRY IN HONDURAS.

Left: Clearing a rubber tree preparatory to tapping. Middle: A typical rubber tree showing the new tapping as well as the scars of former tappings. Right: Tapping a tree high above its base.

It is important when tapping that the knife should reach deep enough to obtain a good flow of latex, but that at the same time the very greatest care should be exercised by the natives not to wound the cambium. Where such wounds have been made there is nearly always a swelling of the stem of the tree at the wounded spot. This interferes with the smoothness of the bark and consequently presents difficulties for subsequent tappings of the renewed bark. These swellings are frequently accompanied by the development of burrs, which are apt to spread over adjoining por-

THE PLANTATION RUBBER INDUSTRY IN CENTRAL AMERICA.

A rubber plantation at Charrera, Panama, showing rubber trees which are 3 years old.

tions of the stem of the tree. It is, of course, essential to see that this tapping is done to a sufficient depth, and one tapping assistant to supervise every 25 to 330 acres in tapping.

Before starting to tap the natives should see that the trunk of the tree is clean and free from dust. If the bark is very rough, it should be scraped down with the back of the knife. The bark should not be too severely scraped so as to show green, or damage will be done, and probably latex will exude. Where there are several cuts on the bark of the tree one over the other, it is very advisable to mark the trees with light scores on the bark so as to secure regularity of these lines. It is a very common fault of natives when tapping to lean heavily at the end of a cut and take off a

THE RUBBER INDUSTRY IN HONDURAS.

In the above illustrations may be seen different stages of the washing and cleansing of the coagulated latex, as the work is done on a large rubber plantation in Honduras.

thicker paring than is done at the beginning of the cut. This "drooping," as it is called, is very troublesome. If not checked, small areas of bark are apt to be left isolated or untapped.

When tapping is first started on young trees of seven years what is called the basal V is the method most generally adopted. Very good yields are in most cases obtained from this style of tapping.

The "Hevea brasiliensis" has been chiefly planted, and also "Castilloa elastica" in Brazil. The last mentioned has the advantage of requiring but little attention in cultivation. It is less prolific but produces a not less highly valued quality of rubber than the Hevea, but it has the advantage that the sap can be drawn by tapping over the whole extent of the bark at the same time, so that a bleeder can collect much more than is the case with the Hevea, where the tappings can only take place once a day or every other day.

Rubber is planted 100 trees to the acre and the average yields are as stated:

Seven-year-old trees, 110 pounds to the acre.

Eight-year-old trees, 150 pounds to the acre.

Nine-year-old trees, 210 pounds to the acre.

Ten-year-old trees, 250 pounds to the acre.

Eleven-year-old trees, 280 pounds to the acre.

The sap is coagulated by means of vinegar in a shallow wooden vessel and the solid mass thus obtained pressed out with a lever; in some cases it is afterwards put through a mangle and then hung out to dry.

Another method of curing is by smoking. The object of this smoking is to thoroughly cure the rubber, as the latex contains many proteins which would otherwise set up an active fermentation and become putrescent before the rubber reached the warehouses. In the crêpe rubber manufactured on plantations nowadays these proteins are, in most cases, well washed out in the washing mills and thus smoking is not strictly necessary in the case of crêpe rubber, of course. A second effect of the smoke is to coagulate the rubber.

To preserve the rubber seeds for use in future planting, the best method is to pack them in charcoal so that they may not lose their germinating power.

First, dry with earth, never squeezing or milking the seed.

Second, after being dried pack in charcoal and place in a dry place for future use.

PAN AMERICA IN THE MAGAZINES

Augustus Saint-Gaudens is the American sculptor whose life and works are dealt with in the May number of the Spanish edition of the BULLETIN. The following is the English version:

To mold in plastic clay the lifelike figure of a horse standing in natural pose, with every detail of form correct, with every swelling muscle, every curve and line in harmony with nature's model, requires a high degree of artistic and technical skill. To show that horse in apparent motion, restive, nervous, restrained by the controlling power of a rider's hand on the taut rein, to give to cold stone or metal the true semblance of action and of motion, requires even a higher degree of skill. To portray in marble or in bronze the delicate features of a lovely child, the graceful little waves of curling hair, the lips slightly parted with the smile of expectancy, purity and innocence revealed in the open countenance, is a work that requires not only the most skillful technique, but also the imagination of a great artist. To make the effigy of a man in the form of a statue a true portrait of the original and then by the cunning of a trained hand and fine imagination to show the very soul of that man in the mere presentation of feature, form, and posture requires the genius of a master of the sculptor's art. But beyond this—to conceive and execute a simple figure, a face, an arm—but all the rest enveloped in the graceful folds of drapery, and yet withal so wonderfully done that what the beholder sees makes him stand in silence and in awe—that is the work of one who ranks with those whose genius has been transcendent and whose creations have made their names immortal. Not many in the world of art have reached this pinnacle of achievement, but among the few that have stands Augustus Saint-Gaudens, the greatest of all American sculptors.

Although born in Dublin, Ireland, whither his shoemaker father, Bernard Paul Ernest Saint-Gaudens, had drifted in his peregrinations from his native village of Aspet, in France, and had married the young Irish girl who eventually became the mother of the future genius, Augustus Saint-Gaudens was as truly American as if he had been born some few months later in the United States, whither his parents emigrated when he was but 6 months old. After a short stay in Boston the family moved to New York, and it was there that, as soon as he had reached the required age, the boy began to acquire the foundation of his future broad culture in the typical city schools of the middle nineteenth century. Until he reached the age of 13

SAINT-GAUDENS' STATUE OF ABRAHAM LINCOLN.

This remarkable statue, regarded as one of Saint-Gaudens' greatest works, stands in Lincoln Park, Chicago. Of it the English art critic, C. Lewis Hind, wrote: "Only Saint-Gaudens has caught the very idea of the national and beloved hero, the rugged power and sweetness of the face, the emotional angularities of the long body, and the sense of will controlled by simple nobility of character. Does he not seem to be waiting to utter the words that are inscribed on the pedestal: 'Let us have faith that right makes might, and in that faith let us to the end dare to do our duty as we understand it.'" A replica of this statue is to be erected in London to commemorate the 100 years of peace between Great Britain and the United States.

THE ADAMS MONUMENT IN ROCK CREEK CEMETERY, WASHINGTON, D. C.

"Of all the sculptor's works the Adams Monument in Rock Creek Cemetery at Washington gives perhaps the best evidence of his imaginative powers. Striking as it is, its meaning is as elusive, as inscrutable, and as mysterious as was supposed to be the riddle of the Sphinx. Each one who sees it interprets the statue according to the lights of his inner self, and all who view it agree that it awakens a feeling of mystery and awe. To one it means resigned and hopeless sorrow, an endless groping for something that is lost in the depths of infinity, and he calls it 'Grief;' to another it typifies unchanging, endless time, and he calls it 'Immortality;' still others see in it eternal calm and peace, and name it 'The Peace of God,' or 'Nirvana.' Saint-Gaudens never saw fit to give it a title or a name. Perhaps he meant that it should stand there an embodiment in bronze of the eternal question, 'If a man die, shall he live again!' The statue seems to know, the calm wisdom of the ages seems to be behind those changeless features cast in bronze, but eternal silence seals the smileless lips, and each may solve the mystery for himself."

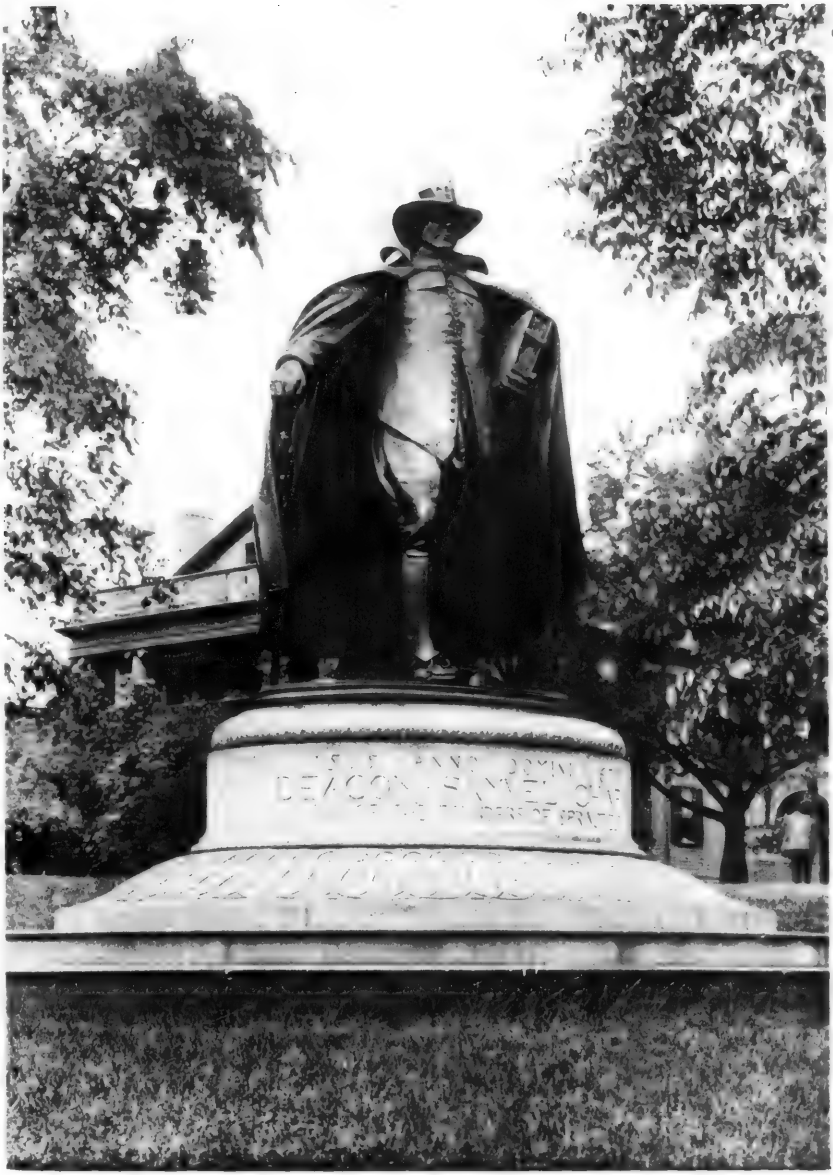
he led the alert, active, strenuous life of the average healthy city boy of "poor but honest" parentage. Sundry ebullitions of the struggling genius within, however, began to manifest themselves about this time, taking the form of sketches in chalk on his schoolboy's slate or varied caricatures drawn in charcoal on the walls of neighboring houses. Seeing in these the promise of unusual talent, a certain Dr. Rea Agnew prevailed upon the boy's father to let him attend the evening classes in drawing at the Cooper Institute. He was also apprenticed to one of the first stone cameo cutters in the United States, one Avet, whose surly, ill-natured disposition made the life of the budding genius miserable for two or three years, but whose teaching gave the boy the means of making a livelihood at a later period in his career. At the age of 16 Augustus obtained work in the same artistic line with Jules Le Brethon, a more congenial master, and also began to sketch from life in the National Academy of Design. In 1867 his father made it possible for him to go to Paris, where he maintained himself by means of his cameo-cutting art, while he began his studies at the Petite École. Afterwards he prosecuted his studies under Jouffroy in the École des Beaux Arts, a most fortunate occurrence, for it was at this period that he needed the guiding hand of such a master. Of Saint-Gaudens's connection with Jouffroy, the eminent art critic and lecturer, Cortissoz, wrote:

> He was perhaps fortunate in studying under Jouffroy, a safe master, who, for all his classicism, was nevertheless near enough to such men as Rude to have seen, and turned away from, the quicksands of commonplace in which the conventional classicist is sooner or later lost. He was enough of an individualist in his art to keep Saint Gaudens from falling into routine, and enough of an academician to nourish in his pupil the sense of measure which might have slumbered if he had fallen into the hands of a more naturalistic teacher. He set him on the right path, helped him to develop his technique along good lines, and did not for a moment attempt to repress or warp his ideas. In Rome the frigid influences predominating did the young sculptor no harm. The classical tradition fertilized his taste, but it did not lure him into immitation of classical forms. The style which Saint-Gaudens brought back with him on his return to this country was remarkable for its blending of polish with freedom. Here was an American who could remain long in contact with the forces of European art and only take from them that which suited him.

At the outbreak of the Franco-Prussian war Saint-Gaudens left Paris to begin his four years' stay in Rome. His cameo cutting earned for him a somewhat precarious living during this period of study and growth. Finally some good commissions from a wealthy American resident of Rome gave him the means to complete his first statue, the "Hiawatha," and to execute his first ordered monument, the figure entitled "Silence." He then returned to New York to continue his struggle with poverty and disappointment for some years until he finally obtained the order for the famous statue of Farragut which now graces Madison Square in New York. From that time he had plain sailing. He modeled the sculpture for La

THE ADMIRAL FARRAGUT MONUMENT, MADISON SQUARE, NEW YORK.

This represents Saint-Gaudens's early work in monumental sculpture, for it was his first commission for a statue. He modeled it in Paris, and exhibited it in the Salon in 1880. Cortissoz says of it: "The whole spirit of this monument is delightfully significant of the quarter-deck—a fact which may trouble those who fear realism in art as they fear the plague, but which carries its own recommendation to those conscious of the importance of realistic principles when they are properly handled. * * * It is true that Saint-Gaudens produced on this occasion a figure instinct with the energy of a man fronting perils in the open air, amid great winds, and under a vast sky."



SAINT-GAUDENS' STATUE OF DEACON SAMUEL CHAPIN, SPRINGFIELD, MASS.

Of this work of Saint-Gaudens, popularly known as "The Puritan," Royal Cortissoz writes: "It endures to illustrate Saint-Gaudens' aptitude in the interpretation of a bygone personality and in the treatment of unconventional costume; and it is a brilliant statue. The stalwart old New Englander advances toward us with energetic tread, his stout staff seeming to ring upon the ground, and the clutch of his fingers upon the Bible under his arm bespeaking the ardent and dogmatic religionist. The wide brim of the peaked hat shades the face of a man of iron will. The long and heavy cloak, that falls nearly to his heels, seems a coat of mail for this peaceable warrior in an age of simple living and strenuous thinking on sublime themes. The statue is a strong piece of characterization."

Forge's scheme of "Angels Adorning the Cross" in St. Thomas Church, New York, and after completing some minor commissions he went back to Paris to complete his Farragut monument. It was during this period that he became interested in relief work and produced some of his finest medallions, notably those of W. G. Bunce, Charles F. McKim, George W. Maynard, and M. Bastien Lepage.

Returning to the United States, Saint-Gaudens opened his studio in New York and began his career as the leading sculptor of the New World. A well-known art critic some years ago paid him the following tribute:

> He found American sculpture a weed; he left it a flower. He learned from France thorough methods of technique; from Italy he imbibed the spirit of the Renaissance; yet without imitation and without any display of obtrusive originality, and with rare taste and indomitable industry and most conscientious workmanship, he created a series of masterpieces that raised American sculpture to a foremost plane in the world's art, and set such a high standard for the younger generation of artists to follow, that there is great promise that American sculpture will long keep its place in that high position to which he raised it.

The many remarkable works of Saint-Gaudens are too numerous for description in this brief sketch. The accompanying reproductions of photographs of a few of his great creations will serve to give some idea of the scope of his genius. Perhaps the monuments and statues best known to the general public in the United States are the statue of Lincoln, Lincoln Park, Chicago; the statue of Deacon Samuel Chapin, popularly known as "The Puritan," in Springfield, Mass.; the Shaw Memorial Monument on Boston Common, Boston; the Sherman Monument at the entrance of Central Park, New York; the Farragut Monument in Madison Square, New York; and finally, that wonderful creation which is his masterpiece in the sphere of loftiest abstraction, the mysterious, robed figure of a woman seated on a granite bowlder, placed in an obscure corner of Rock Creek Cemetery, Washington, D. C.

The Sherman may be regarded as typical of Saint-Gauden's best work in monumental sculpture. Kenyon Cox, himself a great mural painter and artist, as well as art critic, and one of the great sculptor's closest personal friends, wrote the following description of this monument:

> The group is about twice the size of life in each dimension, so that the figure of the general, if standing, would be about 12 feet high. Tall and erect he sits his horse, his military cloak bellying out behind him, his trousers strapped down over his shoes, his hat in his right hand, dropping at arm's length behind the knee, and his head bare, like that of an old eagle, looking straightforward. The horse is as long and thin as his rider, with a tremendous stride; and his big head, closely reined in, twitches viciously at the bridle. Before the horse and rider, half walks, half flies, a splendid winged figure, one arm outstretched, the other brandishing the palm—victory leading them on. She has a certain fierce wildness of aspect, but her rapt gaze and half-open mouth indicate the seer of visions; peace is ahead and an end of war. On the

THE "AMOR CARITAS," BY SAINT-GAUDENS.

This relief in bronze, with a group of medallions, represents Saint-Gaudens in the Luxembourg. He used the same idea and practically the same figure in his representation of the caryatides executed for the house of Cornelius Vanderbilt and in the Smith tomb at Newport.

SPECIMENS OF SAINT-GAUDENS'S WORK.

Top: The Shaw Memorial, one of Saint-Gaudens's best known creations. "The colored troops marching across the relief to the beat of the drum convey the needed impression of martial animation; and Shaw, on his advancing charger, deepens the sense of tense excitement, which it is one of the sculptor's aims to communicate. Simultaneously * * * comes our perception of the sadness in Shaw's face and the melancholy beauty of the figure that floats above him." Bottom: The Sherman Monument in New York. "The group is about twice the size of life in each dimension, so that the figure of the General, if standing, would be about 12 feet high. Tall and erect he sits his horse, his military cloak bellying out behind him, his trousers strapped down over his shoes, his hat in his right hand, dropping at arm's length behind the knee, and his head bare, like that of an old eagle, looking straight forward. The horse is as long and thin as his rider, with a tremendous stride; and his big head, closely reined in, twitches viciously at the bridle."

bosom of her gown is embroidered the eagle of the United States, for she is an American victory, as this is an American man on an American horse; and the broken pine bough beneath the horse's feet localizes the victorious march; it is the march through Georgia to the sea."

The English art critic, C. Lewis Hind, pays the following tribute to the statue of Lincoln, a cast of which he saw in the Metropolitan Museum in New York before seeing the original in Lincoln Park, Chicago:

It is idle to say that it was impossible for a sculptor to fail with such a subject as Lincoln. Some have failed; others have been successful in varying degrees, but only Saint-Gaudens has caught the very idea of the national and beloved hero, the rugged power and sweetness of the face, the emotional angularities of the long body, and the sense of will controlled by simple nobility of character. Does he not seem to be waiting to utter the words that are inscribed on the pedestal: "Let us have faith that right makes might, and in that faith let us to the end dare to do our duty as we understand it." Still grander looks the statue in Lincoln Park, Chicago, of which this is a cast, for there the idea of an audience chamber is suggested by a circular stone exedra, 60 feet across, which surrounds the low pedestal; but at the Metropolitan Museum it was not difficult to imagine that the whole of the vast hall was his audience chamber, and that we were under the influence of his spirit as well as of the spirit of the sculptor who inspired the clay and made it Lincoln.

Of all the sculptor's works, however, the Adams monument in Rock Creek Cemetery at Washington gives perhaps the best evidence of his imaginative powers. Striking as it is its meaning is as elusive, as inscrutable, and as mysterious as was supposed to be the riddle of the Sphinx. Each one who sees it interprets the statue according to the lights of his inner self, and all who view it agree that it awakens a feeling of mystery and awe. To one it means resigned and hopeless sorrow, an endless groping for something that is lost in the depths of infinity, and he calls it "Grief"; to another it typifies unchanging, endless time, and he calls it "Immortality"; still others see in it eternal calm and peace, and they name it "The Peace of God" or "Nirvana." Saint-Gaudens never saw fit to give it a title or a name, whether through neglect or by design no one knows. Perhaps he meant that it should stand there an embodiment in bronze of the eternal question, "If a man die, shall he live again?" The statue seems to know; the calm wisdom of the ages seems to lie behind those changeless features cast in bronze; but eternal silence seals those smileless lips, and each may solve the mystery for himself. The best description of this work the writer has read is that given by Royal Cortissoz, who writes of it in part as follows:

This, the Adams monument at Washington, is, for a kind of restrained grandeur, not only the finest thing of its kind ever produced by an American sculptor, but an achievement which modern Europe has not surpassed. The single figure in this monument sits enveloped in heavy drapery on a rough-hewn block of granite, against a wall of the same material. Her face is visible; the right hand is raised to support the chin, and one sees the bare arm to the elbow; but, for the rest, the form is muffled

THE WINGED VICTORY OF THE SHERMAN MONUMENT.

In the Sherman Monument at the entrance of Central Park, New York City, this superb figure is placed just in front of the horse. To quote Kenyon Cox: "Before the horse and rider, half walks, half flies, a splendid winged figure, one arm outstretched, the other brandishing the palm, Victory leading them on. She has a certain fierce wildness of aspect, but her rapt gaze and half-open mouth indicate the seer of visions: peace is ahead and an end of war. On the bosom of her gown is embroidered the eagle of the United States, for she is an American Victory, as this is an American man on an American horse; and the broken pine bough beneath the horse's feet localizes the victorious march; it is the march through Georgia to the sea."

THE CHILDREN OF JACOB H. SCHIFF, BY SAINT-GAUDENS.

In the many fine medallions executed by Saint-Gaudens perhaps the most conspicuous characteristic is the delicacy with which he handled his subjects. His portraiture work gives a clear and forcible impression of the personality he seeks to depict. In the "Children of Jacob H. Schiff" the delicacy of features, the details of costume, the shaggy hound in the background, are wonderful in their finished execution.

Courtesy of Prof. Francis E. Lloyd.

EXPERIMENTAL GROUND ON WHICH GUAYULE PLANTS ARE CULTIVATED.

The above shows a field in Mexico where the initial experiments in cultivating guayule were made. Now the cultivation and collection of guayule is done by machinery and on a large scale. The preparation of the fields is done by disk harrows drawn by tractors; the planting by specially built machines, similar to tobacco planters, that plow four furrows, set the plants at proper intervals, cover them in, and pack the earth about the roots. One machine plants 18 acres a day. The cultivation is also done by machinery, and for gathering there are two systems: One cutting the rows down by a harvesting machine, the other plowing the plant out, root and all, as in the harvesting of sugar beets. The extraction of the rubber and its deresination is also done by machinery.

as in unearthly garments. It is a mysterious, sphinx-like presence, strange and massive, with something of terror, but more of solemn dignity and beauty, in its broad simple lines. Her riddle is past finding out. All that we know is that it is such conceptions as this that "light the way of kings to dusty death." I have seen it more than once, under different conditions. It is impressive in sunshine, confronting happy nature with its somber secret. But on a bleak winter's day or in rain, its mournful charm is heightened; and here, one reflects, far beyond the measure of any other of his compositions, Saint-Gaudens is the poet, the dramatist, intermingling with the concrete qualities of plastic art the more elusive qualities of mind and soul. * * * The seated divinity in the cemetery at Washington touches the mind at many points, and is remembered with a sense of profundity and supernatural wonder.

To tell of the personal side of the great sculptor, of his disinterested friendships, his generous, lovable nature ever ready to lend encouragement and help to the struggling young artists who came to him for instruction, would mean the writing of a book. Among his personal friends he counted the foremost men of his time and of his country. Artists, sculptors, architects, poets, statesmen, preachers, writers, each and all found something in the genial nature and great heart of the sculptor that was in harmony with the best that was in himself. Saint-Gaudens died at his home in Cornish, N. H., on August 3, 1907, and the tributes paid to his memory by art societies, by the public press, and by the people generally, exceeded those elicited by any man in private life for many years.—C. E. A.

Guayule Cultivation a Success.—In the July 1, 1918, number of The India Rubber World (New York) appears an article by Henry C. Pearson which deals with the cultivation of guayule. The article is really a summary of a special report made by Mr. Pearson as special agent for the Bureau of Foreign and Domestic Commerce of the Department of Commerce, and contains many very interesting facts in connection with the comparatively recent introduction of this rubber-producing shrub as a new agricultural industry in the United States.

It seems the matter of guayule cultivation on a large scale was first taken up in earnest some 10 years ago by a large American company operating in Mexico. The men at the head of the company realized that it was merely a question of time until the wild guayule fields would be exhausted and their business would be stopped, or at least suspended for a number of years. The question, therefore, was, "Can guayule be successfully cultivated?" and Mr. Pearson gives the following account of the way the matter was dealt with and of the success attained:

Most of those who were asked concerning this were positive in their declarations that it would never yield to profitable cultivation. The actual head of the company, a man of broad vision, although careful and conservative, believed that with sufficient effort the impossible could be done. Under his direction, therefore, the work was begun.

Courtesy of Prof. Francis E. Lloyd.

A GUAYULE FIELD IN NORTHERN MEXICO.

There are approximately 130,000 square miles (200,000 square kilometers) within which guayule has its native habitat. Only a small portion carries guayule, an estimate by Endlich (1905) of about 27,000 square miles (70,000 square kilometers) being probably correct as far as the actual productive area is concerned. The whole region in question is embraced within the northern part of the central plateau (mesa central) of Mexico and the adjacent area of Texas. The altitude there varies from 2,000 to 10,000 feet above sea level, the range of guayule extending from 2,000 feet to about 7,000 feet, the most important acreage being found below 6,500 feet. How the scientific cultivation of the plant first begun in Mexico and then transferred to certain areas in the United States has become a success is brought out in Mr. Henry C. Pearson's report, quoted in the accompanying text.

The first thing was the selection of a corps of chemists, botanists, plant physiologists, and experts in desert plants. For this they drew men from agricultural colleges, desert laboratories, and experiment stations, arranging to send their notes and conclusions to these seats of botanical learning, receiving from them knowledge in return.

These scientists took up the following subjects and exploited them most thoroughly: Geographical and altitudinal distribution, climate, air and soil temperatures, rainfall, soil moisture, and relative humidity, analysis of soils and of plants under all conditions, diseases, effects of drought, rain, and of irrigation; seeds, leaves, flowers, stems, and roots, were subjected to the closest scrutiny, under a multiplicity of conditions, and the results all tabulated.

In time their work begun in Mexico was transferred to the United States, notably to California and Arizona. Here were established laboratories and experimental plants, and the work on a commercial scale actually commenced.

The seed of the guayule is very minute, and if one examines the desert plant, very unsatisfactory. In the heads that should hold good seeds will be found half-developed dried husks of seeds and very few good ones. As vital seed, and plenty of it, is an essential, the guayule trainers took hold of the shrub, planted it under varying conditions, fed, watered, starved, and petted it until it was learned positively just what conditions were necessary to full seed pods. In time the barren seed vessels became full ones, and the treatment necessary to get this result became a matter of record.

It may not be generally known, but seeds of some plants, seeds that are vital, and that should germinate without difficulty, refuse to do so. This seems to be particularly true of certain desert growths. For example, there is a cactus distributed very generally through the Southwest that bears seeds in abundance. So far, however, no one has been able to get these seeds to germinate. It was not on the cards that guayule should prove to be in this class. It promised so many other disabilities that it did not seem possible that it had this also. Nevertheless when the first bushel of seeds was carefully sown not one germinated. And so it was with succeeding lots. There was nothing to do but sow smaller lots under every condition that could be thought of, and learn just what was required. For a long time only failure resulted and gloom settled on the experimenters. Then an accident pointed the way and soon this problem, too, was solved.

The problem of speeding up the growth of the plant was one of the most interesting and vexing of all. Left to itself in its desert home under normal conditions, a guayule seedling takes some 20 years to arrive at maturity, that is, as a rubber-bearing proposition. It grew a little at a favorable season each year. The rest of the time it existed, did not grow, nor do anything but sleep. Now, it is exceedingly difficult to get tree, shrub, or plants to do anything that they and their forbears have not previously done, They have no ambition to speed up, to be efficient, to be different. These plant prejudices must first be understood and habits broken by coaxing, cajoling, and fooling. For example, the guayule habit of a slight growth in the spring once a year was noted by the plant physiologist, who took advantage of it in this way. He furnished a simulated spring and the guayule responded, then before it could settle back for months of rest, another spring was sprung. If done at the exact psychological moment, the plant responds. Again and again was this done, and the plant, having no method of checking up its rapidly recurring seasons, attained a lusty growth in record time. By this method the 15-year development that the shrub was accustomed to, and that it prefers, was accomplished in four years. This, by the way, beats first crop *Hevea* by two years.

One of the very interesting preliminaries in guayule cultivation was the study of varieties. To the average guayule expert there were but two types of plants, the *Parthenium Argentatum*, which is the rubber producer, and the Mariola, *Parthenium Incanum*, which much resembles it but contains no rubber. From the beginning, the botanists began to segregate the rubber-producing species into a great variety of types.

Courtesy of Prof. Francis E. Lloyd.

A GUAYULE SHRUB FROM ROOT TO TWIG.

The mature guayule plant is about 3 feet tall, has a spread of about 4 feet, and weighs about 11 pounds. Plants 2 feet in height are considered large enough for commercial purposes. Left to itself in its desert home under normal conditions, a guayule seedling takes some 20 years to arrive at maturity. It grows a little at a favorable season each year; the rest of the time it does nothing but sleep. The guayule habit of a slight growth in the spring once a year was noted by the plant physiologist, who took advantage of it. He furnished a simulated spring and the guayule responded, then, before it could settle back for months of rest, another spring was sprung. This was done repeatedly and the plant development usually attained in 15 years was thus accomplished in 4 years.

The new species, the *Parthenium Lloydii*, named after Prof. Francis E. Lloyd, is one of these varieties, characterized by differences in leaf, flower, root, growth, rubber content, etc., etc. Dr. McCallum, in whose desert laboratory the most of this work was done, published a statement in Science long ago that he had found 125 different species. He told the writer that his records showed to date more than 900 different guayule growths and that the list was still growing.

From the beginning of the experiments much care was taken in the anaylysis of thousands of shrubs to learn all that could be learned concerning the rubber content in them. First of all, the portions of the plants containing rubber were catalogued. This was important in determining whether it was wiser to uproot the plant for the sake of the rubber in the roots or to cut it off above the roots, leaving them to produce new growths. With cultivation in sight, however, there was much more to be learned than the portion of the plant richest in rubber. That was whether the 10 per cent of rubber, the rough estimate of the whole rubber content, was at all variable. The results of the analyses were so astounding that they were done several times over. The facts tabulated showed that there was a wide difference in the amount of the rubber in the different shrubs. This ran from 1 per cent to 10 per cent to 20 per cent, and in rare cases to 27 per cent. Manifestly seed from the 1 per cent would not pay to collect, much less to plant. The poorer qualitites were therefore thrown out and plants that were big producers were selcted as seed bearers for the future cultivated shrub.

Guayule rubber has not been considered to be of the highest grade. When it first came upon the market its resin content was so high and it was so soft that it was accepted with reluctance. Indeed certain importers for years refused to allow that it was rubber at all and scornfully dubbed it a substitute. In time, however, by new methods of extraction, and by deresination, it came into its own as a valuable crude rubber and was used by the millions of pounds.

The searchers for guayule secrets, when they began to test the quality of the rubber in different plants, learned some more surprising truths. Some of the shrubs gave simply a black resinous paste that contained not enough rubber for extraction. Others contained rubber with say 20 per cent of resin, the type that the whole trade is familiar with. A few, however, yielded a firm hard product, low in resin and showing to a remarkable degree the "nerve" that is so characteristic of the best crude rubber.

The result was, of course, that the best producers were planted as seed bearers for cultivated guayule.

Nor was that all. By hybridization, that is the wedding of the big producers with the best producers, plants were produced that had the good qualities of each. Therefore with a big, best producing seed stock the real cultivation of guayule was well on the way toward success.

In an age when almost everything is done by machinery, the growing of india rubber, particularly the tapping and gathering, is hand work entirely. Without vast gangs of coolies the production of rubber in any considerable amount seems impossible. With the cultivation and collection of guayule rubber, however, machinery takes the place of men, and in almost every part of the work. The preparation of the fields is done by disk harrows drawn by tractors. The planting by specially built machines, similar to tobacco planters that plow four furrows, set the plants at the proper intervals, cover them in and pack the earth about the roots. One machine plants 18 acres a day. The cultivating is also done by machinery. For gathering there are two systems; one cutting the rows down by a harvesting machine, the other plowing the plant out, root and all, as in the harvesting of the sugar beets. The extraction of the rubber is also, of course, wholly mechanical. In the event that the rubber is deresinated, that is also done by machinery and follows the well-known process.

Guayule growing in a large plantation involves a laboratory for examining and testing plant and product, a small greenhouse for seed experiment and hybridization,

Courtesy of Prof. Francis E. Lloyd.

BALES OF GUAYULE BEING HAULED TO A RAILWAY STATION IN MEXICO.

"Guayule rubber has not been considered to be of the highest grade. When it first came upon the market its resin content was so high and it was so soft that it was accepted with reluctance. Indeed, certain importers for years refused to allow that it was rubber at all and scornfully dubbed it a substitute. In time, however, by new methods of extraction and by deresination it came into its own as a valuable crude rubber and was used by the millions of pounds."

outdoor plants for seed bearing, seed beds protected by lattice windbreaks, an irrigation system, planting and harvesting machinery, an extraction plant, and above all, knowledge of the plant, and how to handle it, and plenty of capital.

"A Naturalist's Notes on a Trip Up the Orinoco," is the title of an interesting story in the May number of The American Museum Journal (New York) by Mr. George K. Cherrie. It is an account of a trip made about 18 years ago when, accompanied by his young wife and their little baby, he spent several months on the Orinoco River and in its immediate vicinity collecting specimens of the faunal life of the region. The river, especially during the rainy season, is a remarkable stream graphically described by Mr. Cherrie as follows:

Contrary to popular belief, the Orinoco is a very large river. A little below Caicara, which is about 400 miles above the mouth, I have sometimes spent a whole day in crossing, zigzagging among the innumerable islands. This was during the rainy season when the water was at its highest point. Undoubtedly at that place the river was then 40 miles wide. The annual rise varies from 60 to 80 feet, and the banks being low, the water spreads over an immense territory, inundating hundreds of thousands of acres. At such a time—when one is pushing his canoe up stream—many of the apparent islands are really only the tops of tall trees, from 50 to 60 feet high, protruding above the water. It is difficult to comprehend that these are not islands in fact. Even the birds do not always seem to realize how the water rapidly rises, for many build their nests on dry land which is later submerged. Consequently a great number of these nests with their eggs and young are lost. Often I have noted orioles building their homes 25 feet above the water, yet by the time the eggs were hatched the nests were washed away and the young drowned. As the floods begin at the headwaters of the river and its tributaries about the last of April, and continue to rise steadily until about the first or middle of September, one can see the level of the water increase day after day. * * *

Mr. Cherrie and his party spent four months making the ascension of the Orinoco. Steamers are available now, but at the time when he undertook this expedition the only reliable mode of travel was by canoe or some kind of native boat. He had his own canoe manned by natives familiar with the river. His description of the boat and the method of procedure is as follows:

Our canoe, or bungo, which was a large dugout made from a single tree trunk, was a little more than 5 feet wide, from 30 to 36 inches deep, and 34 feet long. It was so solid and heavy that we could scarcely turn it over, although as a matter of fact we did drag it over many rapids, the first of these at Cariben, where there is a swift and dangerous cataract foaming between immense sentinel-like masses of black granite. For about one-third of its length the bungo was covered with a carroza, or awning, which resembled in shape the old "prairie schooner" coverings, but the carroza was thatched with reeds. Under this we slept, and also stored such articles as needed to be kept dry.

Arrangements for cooking in the canoe included a box of dirt upon which a fire could be built. Firewood in sufficient quantity was gathered at one place or another, and sometimes several days would pass without our touching land at all. When night came we would simply tie up in the tree tops. We found it advantageous to take with us such articles as sugar, salt, coffee, rice, and beans, for while some of these could be purchased en route, the prices were excessively high. For meat we depended upon wild game; ducks and geese were plentiful, also squirrels, a species of raccoon,

Courtesy of The American Museum Journal.

MR. GEORGE K. CHERRIE.

The above picture shows Mr. Cherrie in the rôle of an explorer. The photograph was taken by Mr. Kermit Roosevelt, son of ex-President Roosevelt, while he and Mr. Cherrie were with the famous Roosevelt-Rondon Expedition to the interior of Brazil, the expedition which succeeded in exploring and mapping the now celebrated "River of Doubt," subsequently named the "Rio Theodoro" in honor of Col. Roosevelt.

the iguana, and other animals which we esteemed as food. Plantains, yams, and corn we often were able to obtain from the natives in exchange for coffee, pepper, and salt, supplies of which we always took with us for trading purposes. Natives and half-breeds who had been in the settlements and learned the use of black pepper, were almost wild in their desire to obtain this condiment; so with a little of that article we frequently made advantageous trades; occasionally we traded a little salt for some of their hot red peppers.

We were very snug and comfortable in our canoe, where a few chickens in the prow gave an added touch of homeliness, besides furnishing us with occasional fresh eggs. It was interesting to note that whenever the canoe touched shore these chickens would clamor loudly to get out, whereas while on the water they stayed very contentedly in their quarters. When we landed, and the top of the coop was thrown open, they would immediately fly out, although they never wandered very far from camp.

* * *

Mr. Cherrie entertainingly describes some of the birds, rodents, fish, and larger animals encountered during the journey. The accounts of several of these are as follows:

A very curious bird found in this region is the "hoactzin." It is said to be a distant relative of the reptiles, which in its immature stages it somewhat resembles. It is provided with claws near the wrist joint; by means of these, its feet, its bill—and often by hooking the head over a twig or branch—it climbs about its nest in the tree tops after the manner of a quadruped. The nest is a very frail affair, consisting of a platform of sticks and twigs so light that the eggs can be seen from below through the meshes. The nest is always built over the water, usually within 4 or 5 feet of the surface. But in spite of being so placed, it may nevertheless be in the top of a tree on submerged land, and should the waters subside, would be 50 or 60 feet from the ground. Within 24 hours after the eggs are hatched the young leave the nest, dropping into the water at the least alarm. Although they are tiny birds, they swim and dive wonderfully well, continuing this semiaquatic life until they are about one-third grown and their feathers begin to appear. Just when they cease this practice I do not know. If I sat quietly in my canoe, after startling a young bird from the nest, I would presently see it emerge from the water and creep up the branch on which the nest was placed; if undisturbed it would go into the nest and settle down, but if again alarmed, it would swim under the water to the protection of thickly growing twigs or drift where, thrusting only the head above the surface it might breathe and watch the enemy. The adults never go into the water. This may be on account of their heavy plumage, which if wet would make getting about very difficult. In color they are a reddish brown with a yellow crest, giving them somewhat the appearance of a peafowl. The body is as large as that of a crow. They have a strong musky odor, which may account for their common English name, "stink pheasant." The carpal claw persists in the adult bird, but it is so small that it can hardly be said to be functional.

In the tree top islands we frequently found wood rats and mice concealed in natural cavities or occupying deserted birds' nests. During the dry season these animals are mainly terrestrial in their habits. The fact of their living in the tree tops during the rainy season merely shows their power of adaptation to a changed environment. A good many wood rats found in this region have the hair on the upper parts very stiff and harsh, in some cases developed into sharp spines. I believe they feed entirely upon vegetable matter—fruits, buds, leaves, etc.—and they lack the disagreeable odor of the house mice and rats. Consequently we were not surprised to find that many of the natives consider their flesh, which is white and tender, very good eating—an opinion in which we concurred after a trial.

Another rodent esteemed for its flesh is the capybara or "water hog." As the English name would indicate, it is always found near the water, making its home amid the reeds or in the thickets of marsh or swamp. During the day it is usually wary and shy, but in the dusk of the evening, or on moonlight nights, numbers may be seen disporting themselves along the sandy beaches or playing in the water. When hunted, the capybara frequently attempts to escape by swimming or making long dives. A full-grown animal weighs from 150 to 200 pounds; it is the largest of living rodents. Like the wood rat, its food is exclusively vegetable. The flesh is frequently cut into narrow strips by the natives, salted, and sundried for future use.

Mr. Cherrie also tells some stories of the South American jaguar, but fortunately failed to come into personal relations with a living specimen. The caribe, or cannibal fish, however, were caught in large numbers. Interest in the story is heightened by the plain and unaffected style of the author, as well as by the character of the matters dealt with.

Our Present Knowledge of the Forest Formations of the Isthmus of Panama, in the January, 1918, number of the Journal of Forestry (Washington, D. C.) is an interesting contribution by Dr. H. Pittier on the subject of Panaman forestal wealth from the botanist's viewpoint. When the author started his systematic botanical exploration of the country in 1910 something over 1,100 species of plants had been catalogued. After working up about half of the material collected on his survey, which extended practically over the entire Isthmus, he had added about 1,900 more, and in his opinion when all the available material has been examined it will be found that Panama has not less than 3,500 species of indigenous plants. This floral wealth is naturally due to the topographical and climatic features of the country, features which are briefly dealt with in the article as follows:

Six-tenths at least of the territory of Panama is covered with forests, while the rest is given to savannas, parklike formations, and the very small openings resulting from human activity. Leaving the latter aside, the respective distribution of the natural formations, forests, savannas, and parklike landscapes is the result mainly of the régime of the rainfall, dependent itself on the dominating winds.

As is well known the Isthmus of Panama stretches in a west-easterly direction between the Caribbean Sea and the Pacific Ocean, and is thus fully exposed on one side to the northeast trade wind, on the other to the southwest monsoon. Both these atmospherical currents reach the respective coasts saturated with humidity, which is dropped as they ascend the slopes. The trade wind reaches its maximal intensity when the sun is farthest south of the Equator, in March, and is prevailing on the Isthmus during about 9 out of the 12 months, making its influence felt clear across the country. The monsoon, on the other hand, is very irregular, at least in the central and western sections of the Pacific coast, blowing with some constancy only from May to October and not strong enough, as a rule, to modify the climatic conditions on the Atlantic watershed.

Thus the trade wind practically causes abundant and perennial rainfall on the northern seaboard of the country, but having lost most of its humidity in the ascent to the summit of the Continental Divide, it acts in the opposite way— that is to say, as a

drought-producing wind—on the southern slope, with the exception of a narrow fringe of the upper belt. During the predominance of the monsoon, however, such effect of the trade wind on the Pacific slope is overcome and for nearly six months this slope is favored with almost daily rainfall. At the southernmost end of the country, in Darien, the monsoon blows stronger and with greater regularity, causing again abundant perennial rainfall, interrupted, however, by two short dry spells in March-April and September-October. This district is adjacent with the Colombian Choco, which shows the heaviest rainfall of the western continent.

To sum up, the climate of the Atlantic watershed and of Darien is characterized by the rainfall being distributed on the whole length of the year, while that of the central and western sections of the Pacific slope shows two well-marked periods—a dry season lasting from December to April and a wet season extending between May and November.

Panama City has 180 days of annual rainfall; Colon, 246 days. The latter, however, is a low average, because of the exceptional location of Colon in front of the great gap in the Continental Divide. Port Limon in Costa Rica has 304 days. The annual amount of rainfall is, of course, much larger on the Atlantic side. Colon has an average of 3.19 m. (129.4 inches), Panama only 1.80 m. (70.9 inches). No data are available as yet for Darien. The amount of rainfall decreases as the altitude increases. The driest point in Panama is probably the summit of the Chiriqui Volcano, situated to the south of the Continental Divide.

These peculiarities in the régime of the winds and of the rainfall are sufficient to explain the presence of a continuous forest belt along the Atlantic seaboard, as well as in Darien, and of savannas and parklike formations in the remaining part of the Pacific slope.

With regard to their specific composition, these forests are exceedingly varied and belong with very few exceptions to the type of mixed dicotyledonous forests. Up to the present we have listed about 900 species of trees, belonging to 330 genera and 90 families. This computation does not include shrubs and woody vines, which would materially increase the number of species and genera, if not that of families.

Omitting Dr. Pittier's detailed enumeration of the various orders, genera, and species of the great number of trees and plants examined and classified, as well as some of the more technical paragraphs of the article, the following excerpts include some of his general observations:

The Panaman forests belong almost entirely to primary formations, in which the primeval type is seen in all its glory. Secondary growth appears only in the neighborhood of human settlements and along the main trade routes. Though we are often offered descriptions of virgin wilderness by travelers who have ridden or tramped along the railroad from Colon to Panama, few if any of these writers have known what they were writing about. Virgin forest exists in close proximity of the Canal and Panama Railroad, only at a few places unfit for cultivation on account either of their being too swampy or too hilly, and they present there their most stunted type.

* * * * * * *

The real primary forest is found usually in parts removed from roads or towns. It presents several types, according to the prevalence of rainy or semidry climate, and in each case subdivisions can be established on geological or topographical features, the latter including such factors as altitude and combined sometimes with others—exposure, change in temperature, etc.

On the Atlantic watershed and in the interior of Darien we have principally dicotyledonous rain forests of the mesophytic type. Bamboo thickets are rarely met with; tree ferns are scarce; palms, better represented perhaps in the southern district, are

never conspicuous or dominating. This type of forest reaches its full development in the plain, as, for instance, on the alluvial flats of Darien. On the hills the humus layer is thinner, the humidity of the soil less, and the size of the trees somwhat reduced. Some of these trees, however, rooted on hilltops or on flat ridges, rival in size the giants of the plains. Such are, for instance, the enormous, small-leaved Monkeypot trees (Lecythis), which are seen towering above the forest on the hills around Puerto-Obaldia on the San Blas coast, or the Coumarouna trees of the foothills in the Sambu Valley (Darien). A Monkeypot tree which I had felled to obtain specimens near the place first mentioned measured 1.62 m. in diameter at the base; the trunk was 42 m. from the base to the crown; and the approximate total height was 55 m., or about 175 feet. In all those tall trees the crown is umbrella-shape, with a single, terminal story of very large, radiating limbs. In the trees of lesser size, filling the space under the former, the crown is elongate, also with radiate arrangement of the branches, which, however, are disposed in several whorls. There is a great variety in the size and shape of the leaves, but, as a rule, they are narrow in proportion to their length and long-tipped, and often pinnate or palmate; in many cases also they are bunched at the end of the branchlets, as, for instance, in the odd-looking Cespedesia seemanni, with long, nude black limbs ending in enormous bunches of obovate leaves about 1 m. long, from the middle of which issues a no less immense spare raceme of brilliant yellow flowers. Furthermore, in most trees of the evergreen rain forest, the leaves are glabrous and more or less glossy, and they never become wet on the surface, strongly as the rain may pour. I think, however, I have noticed some species which do not show this peculiarity. Although the foliage, as a rule, is perennial, there are species of Lecythis, Sapium, Vitex, and some others, absolutely deprived of leaves at certain periods.

An interesting peculiarity of the rain forest is the frequence of cauliflorous trees—that is, of trees which produce their flowers on the old wood of the trunk and larger limbs. Cacao tree is a classical case. In the Panama forests there are several species of the same genus, Theobroma, with the same character, but also at least two species, one of which has been recently separated as a new genus (and is seen only in a state of semicultivation), which produce flowers both on old wood and slender branchlets, or only on the latter. Other cauliflorous species are the beautiful Brownea marcophylla, with heavy hanging clusters of purple flowers surrounded with broad scarlet bracts, Grias fendleri, discovered first by Fendler in the forest at the mouth of the Chagres River and found again by myself in Darien. * * *

Another feature, which is not special but frequent in trees of the rain forest, is the presence at the base of their trunks of plank buttresses, which form the origin of the lateral roots and radiate around the trunk in variable numbers. These planks are 2 to 3 meters high and broad in certain fig trees, and then the interval between them need only be roofed to form a very comfortable and well-sheltered cell. * * * Many species of trees can be distinguished by the appearance of their buttresses, and it seems that these are seen mostly in species growing on flat, soft ground, their object being probably to give the tree a broader base and firmer standing.

* * * * * * *

The arrangements of the rain forest in successive tiers is a fact which easily strike the student and has been commented upon by many authors. In the rain forest of Darien, very tall trees, the crown of which spreads in full sunlight, are not numerous, and it is difficult to procure the necessary specimens for their identification. Besides one or two species of giant fig trees, I have been able to recognize two of the principals and to describe them as new species—Couroupita dariensis, the Darien cannonball tree, and Coumarouna panamensis, a papilionate tree nearly related to the one producing the tonka bean. Of those forming the lower levels we have already a long list. The giant trees just named appear as islands above the general upper surface of the forests, so that the second story from above is really the principal one. As

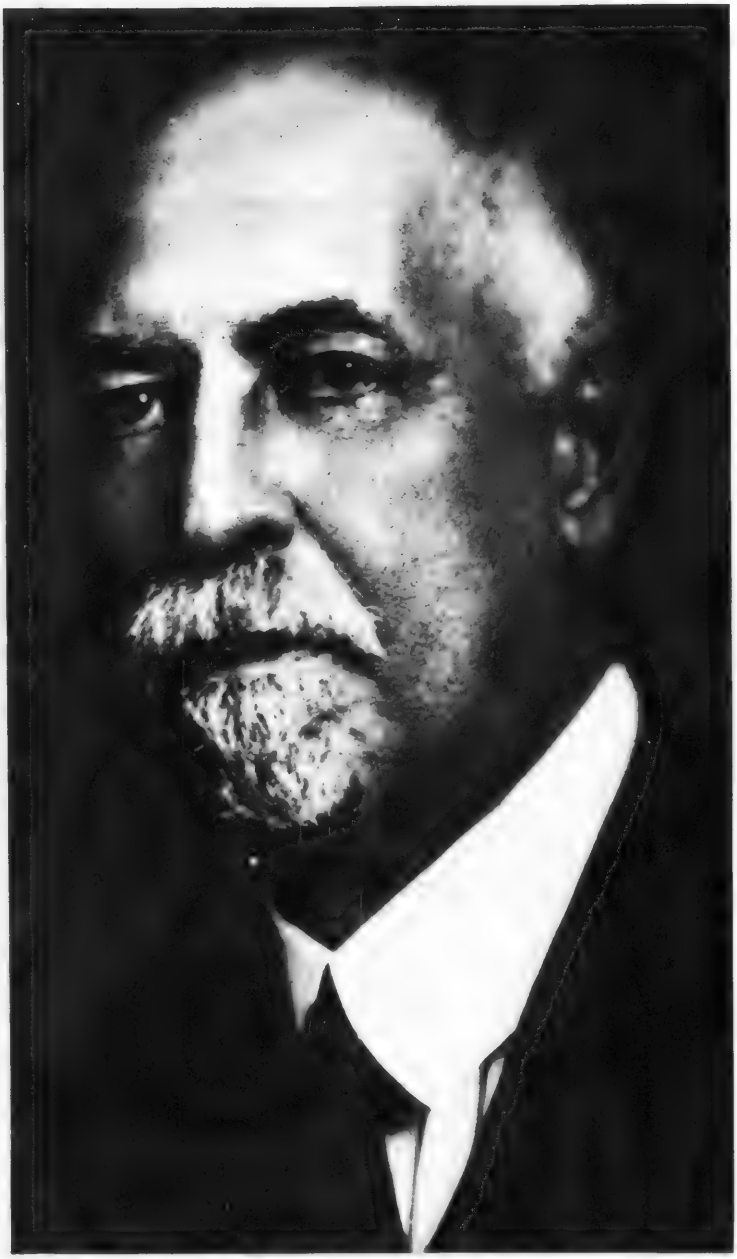
constituents of this level we note, among others, species of Copaifera, Virola, large-leaved Lecythis, Brosimum, Pourouma, and at least one tall palm; in the third or middle level there are species of Alseis, Warscewiczia, Guatteria, Eschweileria, Brownea, and an increasing number of palms; below this we enter into the dominion of shrubs, extremely rich in species, with predominance of Rubiaceae, Piperaceae, and Melastomataceae, and again a few dwarf palms. * * *

As defined by Schimper, the monsoon forest is characterized by "trees losing their hygrophilous foliage during the dry season and renewing it at or immediately before the commencement of the monsoon rains: apart from this, they have only xerophilous organs well protected against drought." This definition applies adequately to a large part of the Panama forests of the Pacific watershed with one or two dry seasons.

The typical, ever-prominent tree of the monsoon forest of Darien and the eastern Pacific coast is the Cuipo tree, *Cavanillesia platanifolia*, which reaches here the northernmost limit of its extension, while to the southward it goes as far as Peru. It is exceptionally abundant and certainly gregarious on the low hills of Darien, in the Canal Zone, and appears among the remnants of the primeval forests in pastures and old clearings. It is 40 to 50 meters high when fully grown, with a basal diameter of over 2 meters. On top of a monumental columnar trunk there rests a scanty crown, so that when the tree is seen isolated it gives an odd impression of disproportion, like that of a very tall and broad-shouldered man with a small head and a wingless hat. The bark is smooth and reddish, and, like the Ceiba and certain Burseraceae, it does not offer a convenient substratum for epiphytic vegetation.

Several other trees contribute to the formation of the upper story of the monsoon forests, among them Enterolobium timbouva, which in opposition to the congenerous Guanacaste, E. cyclocarpum, is a real forest tree; Pentaclethra filamentosa, an elegant Mimosaceous tree; a conspicuous species of the recently described genus Dilodendron, etc. But the following lower story is exceedingly rich in beautiful types, mostly very much mixed and scattered, but also semigregarious. * * *

As we proceed from Panama westward the forest formation becomes more broken and at the same time assumes a more xerophilous character, without, however, ever assuming, as in the northern districts of Venezuela, the extreme case of an underbrush mixed with Cereus and Opunta species. These woods belong to the type designated as savanna forests and are better considered in connection with the study of the grass formations. At the extreme western end of Panama the monsoon forest appears again with a strongly modified composition as to its floristic elements, but with the same general characters.



NEW MINISTER OF NICARAGUA TO THE UNITED STATES.

Sr. Don Diego Manuel Chamorro, the new Minister of Nicaragua to the United States, presented his letters of credence to President Wilson on August 7. Sr. Chamorro is a son of a former President of Nicaragua and has held important positions in his country. In 1911 he was Minister of Foreign Affairs and in 1913 Minister of Public Instruction.

Photo by Harris & Ewing.

HON. THOMAS SAMBOLA JONES, ENVOY EXTRAORDINARY AND MINISTER PLENIPOTENTIARY TO HONDURAS.

Hon. Thomas Sambola Jones, appointed envoy extraordinary and minister plenipotentiary of the United States to the Republic of Honduras in July, 1918, was born at Jackson, La., October 5, 1859. He was educated at Centenary College, holding the degrees of A. B. and A. M. from that institution, and took his degree in law at Tulane University, New Orleans, La. Two years after leaving college he became superintendent of public schools at Baton Rouge; entering journalism a little later, he was editor of the Louisiana State Journal, and also was the founder and editor of the Louisiana Educator. He served as secretary to Gov. Foster, of Louisiana, and as colonel on the staffs of various successive governors of the State. In 1904 he was appointed the southern commissioner for the St. Louis Exposition, and from 1902 to 1912 was judge of the Inferior Criminal Court of the City of Baton Rouge. From 1912 to 1915 he was commissioner at large for the Panama-Pacific International Exposition at San Francisco, and since 1912 has been a member of the Louisiana General Assembly. At the time of his appointment he was also chairman and manager of the speaker's bureau of the Louisiana State Council of Defense, and director of the Red Cross for the sixth congressional district of Louisiana. He is widely known for his marked ability as an editor, lawyer, and public speaker.

Photo by Harris & Ewing.

DR. MARIO DÍAZ IRÍZAR.

Director of the International Trade-mark Registration Bureau of Habana.

Dr. Mario Díaz Irízar was appointed Director of the International Trade-mark Registration Bureau at Habana by His Excellency the President of Cuba on December 6, 1917. Aided by the direct personal interest of President Menocal, Dr. Díaz Irízar has already succeeded in arranging many details preliminary to the operation of the bureau. Because of the generous attitude of the Cuban Government in appropriating $10,000 toward the maintenance of the bureau, and $25,000 toward the cost of a building to serve as its permanent home, as well as the cession of a site for the same, the early realization of the work of the bureau is assured. In selecting Dr. Díaz Irízar to be director of the new bureau, President Menocal chose a well-known attorney who has become perhaps the best-known Cuban authority on trade-marks. Dr. Díaz Irízar was born in Cienfuegos, Cuba. Part of his studies were carried on at Villanova College, Pennsylvania, and in the Institute of Matanzas; he was graduated as doctor of laws at the University of Habana. In 1911-12 he won the gold medal offered by the Bar Association of Habana for an essay on trade-marks. In 1915 he was officially congratulated by that learned body upon the completion of an elaborate study of the law of trade-marks and patents, a study subsequently published by the Government of Cuba. The municipal administration of Habana later conferred upon him a gold medal for distinguished service in the field of administrative law. Dr. Díaz Irízar is now engaged in the practice of law in Habana.

Photo by Harris & Ewing.

SEÑOR DON LUIS FIDEL YÁNEZ, FIRST SECRETARY OF THE EMBASSY OF CHILE IN THE UNITED STATES.

Señor Yánez entered the diplomatic service of his country in 1910 as attaché to the Ministry of Foreign Relations. In 1915 he went to Argentina as Secretary of the delegation, presided over by the Minister of Foreign Relations, Señor Alejandro Lira, the purpose being to sign in Buenos Aires the A. B. C. treaty. In 1916 he was appointed First Secretary of the Legation of Chile in Japan on the occasion of the ceremonies incident to the coronation of the present Emperor, and remained as chargé d'affaires on account of the death of the minister, Señor Herboso. He returned from Japan to be again attached to the Ministry of Foreign Relations until February, 1917, when he was chosen by his Government for the position he now occupies.

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NEW YORK'S GREATEST FOURTH OF JULY PARADE.

July 4, 1918, will be memorable as the day upon which the celebration of the Independence of the United States was observed in almost every quarter of the earth and by the members of practically every nationality in the world. In the great American metropolis alone over 100,000 men, women, and children participated in the pageant. "One and all, they marched beneath the Stars and Stripes; one and all, they paid loyal homage to the land, whether of their birth or their adoption, which was the first to proclaim the sacred precept, 'Government of the people, by the people, and for the people shall not perish from the earth.'" The idea of having a special celebration of the day by citizens of foreign birth and their descendants was first advanced by one of the organizations of foreign-born citizens. President Wilson indorsed the idea, and it spread like wildfire over the entire country, so that when the day arrived celebrations on a greater scale than had ever been known took place in every city and in every village, celebrations in which were joined the people of every race and of all conditions — the people that make up the citizenry of a nation of over 113,000,000.

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CUBAN BEAUTIES WHO PARTICIPATED IN THE FOURTH OF JULY CELEBRATION IN WASHINGTON.

In the general celebration of the national holiday of the United States on July 4, 1918, practically all of the Latin American Republics participated. In Washington, in addition to the great parade of representatives of all the countries, the Latin American Republics held a special celebration on the beautiful esplanade in front of the Pan American Union Building. Among the chief features were the performance of national dances, the rendition of national music by native musicians, striking tableaux, etc. Among the most unique and original of these presentations was that of Cuba, represented by the young ladies pictured above, dressed in native Cuban costumes, who demonstrated typical Cuban songs and dances. The photograph shows them grouped at the marble entrance of the building.

VENEZUELAN BEAUTIES WHO PARTICIPATED IN NEW YORK'S FOURTH OF JULY PARADE.

Gracing the beautiful float which represented the Venezuelan citizens in New York's greatest Fourth of July parade were the young ladies pictured above. Five represented as many important battles in their country's war of independence, while three personified the spirits of Glory, Liberty, and Fame. Their names and subjects represented, reading from left to right, are as follows: Irmis Barret de Nazaris, representing the battle of Carabobo; Maria C. Vivas Pérez, the battle of Boyacá; Corina Spinetti, "Glory"; Adelina Spinetti, "Liberty"; Anita Saphir, "Fame;" Maria J. Baptista, the battle of Ayacucho; S. Eda Jugo, the battle of Pichincha; and Alicia Baptista, the battle of Junin.

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THE BOLIVIAN FLOAT IN NEW YORK'S GREAT FOURTH OF JULY PARADE.

One of the handsomest floats in the great parade was that of Bolivia. Young Bolivian beauties, appropriately costumed, represented the Republic, while the float bore numerous pictures of Bolivian heroes, historic scenes, and such placards as "We are with the United States," "Fought 15 years against autocracy," "We are doing our bit for the Allies," etc. The lifelike figure of a llama, a miniature mountain, palms, etc., were other decorations. Other Latin American Republics represented by appropriate floats were Cuba, Mexico, and Panama, while one float represented the countries of Central America. Consuls and their staffs and representative citizens from the other South American countries also participated in the parade.

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THE VENEZUELAN FLOAT IN NEW YORK'S GREAT FOURTH OF JULY PARADE.

One of the most beautiful and spectacular displays in the great Fourth of July parade in New York was the section representing the Venezuelan citizens of the United States. At the head of this section was carried a broad banner bearing the portraits of Washington, Lincoln, and Wilson. Another banner proclaimed "Venezuelans and Americans in harmony," while behind these was the effective float pictured above, the central figure of which was a colossal statue of Gen. Simon Bolivar, the great Venezuelan emancipator. Three handsome young women, garbed in classical white drapery, posed in front of the statue, holding the trumpets of fame, while flanking the float on both sides were typical Venezuelan cavalrymen.

LEGISLATION

On Thursday, July 11, 1918, a meeting was held at the office of the Assistant Secretary of State, the Hon. William Phillips, for the purpose of presenting Dr. Mario Díaz Irízar, director of the International Trade-mark Registration Bureau of the Americas, established at Habana by the Cuban Government, to representatives of a number of the executive departments of the United States interested in the operation of the new bureau, as well as to representatives of international organizations, such as the Pan American Union and the International High Commission, directly concerned with any movement designed to carry into effect international technical treaties between the American Republics.

At the Fourth International Conference of American States in Buenos Aires in August, 1910, a convention concerning the protection of trade-marks was signed by representatives of 20 American Republics. The convention provided for the establishment of two registration bureaus, respectively at Habana for North, Central, and West Indian America, and one at Rio de Janeiro for South America. The two bureaus were intended to register certificates of ownership of trade-marks issued by the respective trade-mark offices of the countries of origin of registrants. The bureaus were intended to exchange each week records of such registration, and in this way, upon the payment of a single fee at either of the bureaus, a registrant would automatically secure protection of his trade-mark in all the countries of the hemisphere which had ratified the convention. When two-thirds of the countries comprising either group had ratified the convention, the bureau corresponding to that group was to be opened. Accordingly, in December, 1917, the President of Cuba was able to inaugurate the bureau at Habana for the northern group, a sufficient number of countries having ratified the convention. The bureau at Rio de Janeiro can not be opened until three more countries have ratified the convention. A list follows of the countries in the two groups which have to date ratified the convention or adhered to it:

Southern group: Brazil, Ecuador, Paraguay, and Bolivia.

Northern group: United States, Cuba, Dominican Republic, Guatemala, Honduras, Nicaragua, Panama, Costa Rica.

The Cuban Government has already appropriated $10,000 toward the expenses of the bureau during its first year of operation and has

ceded an appropriate site for the construction of a permanent home for the bureau. It has further generously contributed toward the cost of erecting such a home to the amount of $25,000. The total cost of erection and the cost of maintenance of the bureau will be borne by the countries of the northern group, respectively, in a manner similar to the proportional contribution made by the American Republics toward the support of the Pan American Union. The same procedure will be followed later in the case of the bureau at Rio de Janeiro.

Having despatched a number of matters preliminary to the actual opening of the bureau, Dr. Mario Díaz Irízar, the director, proceeded to Washington to confer with the trade-mark authorities of the United States Patent Office. His conference was opened formally, as stated above, at a general meeting presided over by the Assistant Secretary of State. At this meeting there were present:

Hon. William Phillips, Assistant Secretary of State.
His excellency, Dr. Carlos M. de Céspedes, Minister of Cuba to the United States.
Dr. Mario Díaz Irízar.
Hon. L. S. Rowe, Assistant Secretary of the Treasury and Secretary General of the Central Executive Council, International High Commission.
Hon. F. J. Yanes, Assistant Director, Pan American Union.
Hon. James T. Newton, Commissioner of Patents.
Hon. Lester Woolsey, Solicitor of the Department of State.
Hon. Julius Lay, Foreign Trade Advisor of the Department of State.
Hon. Thorvald Solberg, Register of Copyright.
Dr. C. E. McGuire, Assistant Secretary General International High Commission.
Mr. C. P. Carter, assistant to the chief, Bureau of Foreign and Domestic Commerce, Department of Commerce.
Mr. C. M. Barnes, assistant to the Adviser on Commercial Treaties, Department of State.

After Mr. Phillips had outlined the purposes of the meeting and expressed the gratification of all interested parties that the Cuban Government had been able so promptly and vigorously to carry into effect the duties imposed upon it by the convention of 1910, Dr. Díaz Irízar briefly surveyed the task which the bureau at Habana would have to undertake. He set forth the steps taken by the Government of Cuba to give effect to the convention, and the personal wish of President Menocal to help in any way possible.

Dr. Rowe pointed out that in his conference here Dr. Díaz Irízar could not only derive assistance from the appropriate technical officials in the formulation of his rules, but that he in turn could be of great assistance to these officials in preparing domestic legislation here, necessary to give effect in the United States to the Trade-Mark Convention.

Mr. Phillips thanked the Cuban minister for the prompt and effective way in which the Government of Cuba, and in which he per-

sonally had contributed to the realization of the system of protection of this branch of industrial property contemplated by the convention of 1910.

His excellency, the minister of Cuba, then expressed the sincere intention of his Government to do all that might be necessary to make the work of the new bureau in every way satisfactory.

A small committee was then selected to confer with Dr. Díaz Irízar during his stay in Washington.

DOMINICAN REPUBLIC.

On July 1, 1918, the military government issued regulations respecting manufacture, importation, preparation, distribution, prescription, sale or gift of opium, morphine, cocaine, and other narcotic drugs, by which it is made illegal to perform any of the acts mentioned on the part of any person, firm, society or corporation, which has not been registered under the regulations and paid for and obtained the certificate provided thereby.

GUATEMALA.

By presidential decree of February 1, 1918, every physician, pharmacist, or dentist, national or foreign, exercising his profession in Guatemala is attached to the Red Cross and required to render service as required by the society whenever necessary. The decree regulates the manner in which the services are to be rendered and provides for fees.

By act of the National Assembly of April 28, 1918, an additional import on consumption is placed on each bottle of spirits of 3 pesos per bottle. The revenue derived is to be devoted to the reconstruction of national buildings injured or destroyed by earthquake.

By presidential decree of May 4, 1918, martial law is continued throughout the Republic. It is declared that the decree No. 731, suspending individual guaranties provided in Title II of the constitution, is in full force and effect.

By act of National Assembly of April 28, 1918, the President is fully authorized during the recess of the assembly to incur and pay off loans, reform tariffs, modify budgets, and prescribe any regulations conducive to the betterment of the economic situation of the country, to arrange finally for the public internal debt and the reconstruction of public buildings. An account of how this authority is exercised is to be made to the assembly at its next session.

MEXICO.

By presidential decree of April 26, 1918, an internal stamp tax is placed on gold, silver, and industrial metals as follows:

A. Eight per cent on the value of gold and silver exported in the form of ore, concentrates, cyanide or sulphides or smelting residuums, or in any other form combined or mixed with substances not properly known as metals.

B. Seven per cent on the value of gold and silver exported after the same has been treated in the country up to the grade of being combined or alloyed only with metals, no matter what may be the proportion of the mixture.

C. Six per cent on the value of copper exported in the form of ore or concentrates of less than 50 per cent copper. When the New York price of electrolytic copper is less than 20 cents U. S. currency per pound this tax will be 5 per cent.

D. Five per cent on the value of copper in bars, mattis, or concentrates of more than 50 per cent copper content, and 300 grams of silver and 5 grams of gold per ton, the New York price of copper being 20 cents per pound or over. The silver and gold pay under paragraphs A and B, except as hereafter set out.

E. In the case above, when the New York value of copper is less than 20 cents U. S. currency per pound, the import on the copper content is reduced to 4 per cent.

F. Two and a half per cent of the value of copper in bars, mattis, and concentrates having a copper content of more than 50 per cent and less than 300 grams of silver and 5 grams of gold per ton, without regard to the New York market price of copper.

G. Three per cent of the value of lead, tungsten, molybdenum, manganese, graphite, and mercury.

H. One per cent of the value of zinc, tin, antimony, and other metals or minerals and substances containing the same not classified in the paragraphs above.

I. Seven per cent of the value of gold and silver presented at the mint for coinage.

The mint will receive for coinage gold and silver from private individuals, without limit as to gold, and as to silver on special order from the treasury department. Pure gold is to be taken at the rate of 1,333.33 pesos (Mexican gold) per kilogram and pure silver at the New York price in Mexican money as of the day of presentation at the mint.

The import is not to be collected on:

A. Old national or foreign gold coins presented at the mint for recoinage.

B. Gold and silver exported in the form of ore, earth or powder, in the natural state or mechanically concentrated, and in cyanides, sulphides, or smelting residuums, provided that the amount of gold does not exceed 2 grams per ton and the amount of silver 250 grams per ton.

C. Copper ore of less than 3 per cent copper content; lead ore of less than 8 per cent, and zinc ore of less than 15 per cent zinc content.

D. Gold and silver produced by smelting foreign ores. Four months' period for smelting allowed.

E. Gold and silver employed in national industries.

F. Mineral specimens in the natural state up to 10 kilograms in weight and 10 pesos in value.

In the same decree the annual mine property tax is fixed on a progressive scale as follows:

From 1 to 5 pertenencias (claims) at the rate of 6 pesos yearly per pertenencia or 2 pesos per tercio (third).

From 6 to 50 pertenencias at the rate of 9 pesos yearly per pertenencia or 3 pesos per tercio.

From 51 to 100 pertenencias at the rate of 12 pesos yearly per pertenencia or 4 pesos per tercio.

Above 100 pertenencias at the rate of 18 pesos yearly per pertenencia or 6 pesos per tercio.

The progressive feature is to be applied in all cases where pertenencias belong to the same owner and are registered in the same mineral district.

PANAMA.

By presidential decree of March 22, 1918, it is provided that in cases where executive permission is granted for the importation of arms and munitions a copy of the permit shall at once be forwarded to the Panaman consul at the foreign port of shipment.

SALVADOR.

The National Assembly on March 4, 1918, repealed the act of April 24, 1917, placing an export duty of 50 cents gold on hides of all kinds. The only export duty on hides at present is that imposed by executive decree of June 13, 1916, 18 cents per kilo.

URUGUAY.

On February 6, 1918, executive approval was given to the act of Congress imposing a real property tax. The new law is applicable in all parts of the Republic except in the Department of Montevideo. The tax is 4 pesos per thousand on rural properties up to the value of 2,500 pesos and 4½ pesos per thousand upon rural properties valued above that sum. Improvements are not to be taxed on rural property. On urban and suburban property the tax is 6½ per thousand upon land and improvements.

By executive decree of February 8, 1918, the export of the following food substances is prohibited:

Legumes and flour made thereof, tubers, fruits, vegetables, fowls, butter, and eggs.

On March 22, 1918, Congress authorized the executive to issue bonds up to 4,000,000 pesos bearing 6 per cent interest to be known as the public works debt.

INTERNATIONAL TREATIES

The Governments of Honduras and Salvador, on April 6 last, agreed upon a convention of limits to determine their differences regarding the demarcation of the dividing line on the land frontier separating the two countries. The contracting parties pursuant to this convention will name commissioners who will organize a mixed commission of limits charged with the settlement of the pending doubts and difficulties regarding the common land frontier and to mark upon the land the dividing line as they find it. The points or lines on which the mixed commission may be in entire accord shall constitute the unquestioned demarcation of the frontier in respect to the said points and lines. The points which may not be settled by the commission shall be submitted to the inappealable arbitral decision of His Majesty the King of Spain, or failing such, to any one of the Presidents of the Latin-American Republics who may be agreed upon by the chancelleries of both countries. Provided that if before submitting the matter to any of the arbitrators mentioned, the Central American Court of Justice is reestablished with the identical organization it has had, the point or points in controversy shall be decided by the said court. The two Governments reserve to themselves the right to form a special mixed commission to resolve in a friendly manner any differences as to limits, the decisions of which are to be respected by the commission charged with the general study of the frontier line.

On February 28 last, in Tegucigalpa, plenipotentiaries of Honduras and Salvador signed a treaty of free commerce between the two countries. According to this treaty there shall be absolute freedom of commerce respecting natural products and products manufactured from raw material produced in either of the republics; being excluded therefrom articles of government monopoly, or which may hereafter become such, in the respective countries. The products above mentioned, except coffee, hides, and cigarettes shall be free of import, export, and transit duties. The high contracting parties recognize the desirability of making uniform their respective customs tariffs and will name delegates who shall study the same and indicate the manner of doing away with existing differences. The freedom of commerce established is agreed upon only with respect to traffic by the land frontiers and through the ports of the Gulf of Fonseca. The

contracting parties declare that the exemptions stipulated in the treaty grow out of the bonds that unite them as members of a single nationality, agreeing thereby to denounce commercial agreements which they may have with other countries and which might give ground for a like favorable concession, and declaring the present convention noneffective if they find themselves obliged to concede a like treatment to third countries. The duration of the treaty is to be six years, to continue for other like terms of six years in succession, provided that before the termination of any term it be not denounced upon three months' notice.

The Congress of the Republic of Uruguay approved by law on February 2 last the treaty for extradition of criminals signed in Rio de Janeiro December 27, 1916, by the ministers of foreign relations of Brazil and Uruguay.

On February 4 last the exchange of ratifications of the postal-package convention celebrated in Rio de Janeiro June 22, 1916, between Brazil and Chile was effected. According to this convention postal packages may be sent from one country to the other up to 5 kilograms weight without declaration of value. Each package sent from Brazil to Chile shall pay 1 franc for territorial service and each package sent from Chile to Brazil 1 franc 75 centimes for the like service. The amount of postage upon the packages shall be fixed by the administration of origin in accord with the legislation of the respective country. This convention will remain in force until one of the parties shall with one year's notice make known to the other its desire to put an end thereto.

The President of the Republic of Salvador on February 4 past, approved the convention for exchange of postal money orders celebrated November 22, 1917, between Argentina and Salvador. According to this convention the postal administrations of Salvador and of Argentina shall establish a service of postal money orders between the two countries under provisions, final protocol and regulations agreed upon in Rome. The Argentine Republic will issue in American dollars the orders which are to be paid in Salvador, adopting as a rate of legal conversion $1 equal to $1\frac{36}{1000}$ pesos Argentine gold ($1=1.036 pesos gold), and Salvador will issue in Argentine gold money orders to be paid in Argentina, counting American dollars at the rate above established. The maximum amount of the orders to be exchanged between the two countries is limited at present to $100 and orders are not to be issued for less value than 50 centavos Argentine gold. The exchange offices shall be, on the part of Salvador, San Salvador, and on the part of Argentina, Buenos Aires. Neither the issue of telegraphic money orders nor the transmission of postal orders by express is to be admitted.

PUBLIC INSTRUCTION AND EDUCATION

The need for an interchange of information on educational matters has long been felt by the leaders of thought in the American Republics. As early as 1906, at the Third Pan American Conference at Rio de Janeiro, a resolution was adopted authorizing the Pan American Union (then the International Bureau of American Republics) "to supply information on educational matters," a resolution which was reiterated by the fourth conference at Buenos Aires in 1910. The First and Second Pan American Scientific Congresses, too, made recommendations to this effect. At the latter congress, held in Washington in 1915–16, an important resolution was passed urging the organization in connection with the Pan American Union of a department of education with the broadest powers for serving the educational interests of the Americas. The matter has for some time been under consideration by the governing board of the Pan American Union, and after the meeting of the last scientific congress definite steps were taken by the board to create a special section of education in the office, but because of financial limitations it was determined on May 2, 1917, that the assistant director should give special attention to the development of a plan for the organization of the section. On November 7, 1917, the assistant director submitted to the governing board a report covering the preliminary work that had been done, and later a special committee on education, consisting of the ambassador of Mexico and the ministers of Uruguay, Guatemala, Venezuela, and Colombia, was appointed to act in an advisory capacity in regard to the development of the section of education.

Without a large increase in expenditure and considerable additions to the staff of the Pan American Union, it would be impossible to carry out many of the duties that have been suggested at various times for the section of education, such as the publication of important works on education and the promotion in each country of the scientific study of educational problems, but there is much that can be done even with the present resources.

The first step taken by the section of education has been to secure all possible information regarding educational systems and institutions in the Republics of America. Correspondence has been carried on with the educational officials of each of the Latin-American countries, and the information requested is being received and classi-

fied so as to make it available for consultation. Data concerning educational institutions of the United States has been secured in some cases through the assistance of the Bureau of Education and in others by direct correspondence with a large number of universities, colleges, and schools, as well as various special agencies interested in promoting the well-being of Latin-American students in this country. A list has been prepared and distributed widely throughout Latin America showing what institutions (about 50 at the present time) make special offers of free instruction, and in a few cases additional scholarship aid, to Latin American students. The attitude of college and university officials in the United States has been uniformly liberal and cordial to a most gratifying degree.

The section of education of the Pan American Union is in constant correspondence with a large number of students in Latin America wishing to take advantage of the offers of free instruction made by these institutions, or in quest of information as to the special opportunities offered for the study of medicine, engineering, agriculture, or other professions. The credentials of these applicants have been translated into English by the section of education and submitted to the college or university selected by the student. In most cases acceptance of the credentials has been secured, together with the assignment of scholarships covering tuition. In a number of instances, however, students have had to give up the plan of coming to the United States, owing to the great increase in living and traveling expenses and other uncertainties of life caused by the war. Notwithstanding this situation, which might be considered discouraging to the establishment of a steady current of students from Latin America, it is most satisfactory to state that the movement of students from Latin America to the United States, which has had a notable increase in recent years, has been given a great impetus by the world war on the one hand, and on the other because of a better knowledge of the educational facilities offered by the institutions of learning of the United States and their recognition of educational methods and progress in Latin America. The Committee on Friendly Relations Among Foreign Students, a philanthropic organization in New York, estimates that there are now 2,000 of these young Latin Americans in the United States.

One of the greatest obstacles, even in normal times, to the coming of vast numbers of young men and women who are eager to complete their education in the United States, and likewise to a reciprocal movement of North American students to Latin American countries, is the great expense of traveling so far from home and maintaining themselves for several years in a foreign land. Various suggestions have been made for the establishment of student pensions, by the American Governments or by private organizations, which would

make possible on a large scale this interchange of students between the Americas, so fraught with possibilities for the development of international good will. The practice of pensioning students for study abroad is quite common among the Latin American Governments, and it is hoped that some practicable plan may be worked out to meet this need.

An interchange of teachers and professors is another phase of educational rapprochement which has been the object of much earnest thought and discussion. The advantages to be gained in this way from the broadening of the teachers' viewpoint are obvious; the realization of the idea offers some practical difficulties. A great many teachers in the United States are genuinely interested in the Latin American countries, and have written to the Pan American Union relative to obtaining a position in one of them. Unless, however, the teacher is thoroughly familiar with the language of the country to which he wishes to go, and is a specialist in certain branches of instruction, such as physical training, agricultural education, the Montessori method, etc., he is at a disadvantage as compared with the teachers trained in the native normal schools, many of which are very well equipped. Moreover, salaries of teachers are lower in most Latin American countries than in the United States, although living expenses are also lower. Then, too, a majority of the teachers wish to spend only a year or two in a foreign country, and most institutions do not care to employ a person who does not expect to be permanent. If, however, a college or university in the United States exchanges teachers with a similar institution in Latin America, this difficulty is obviated, and both the college and the teacher have something definite to count on in making the arrangement. It would seem that teachers of languages would have a better opportunity to enter first into such an exchange of positions, and the plan could very advantageously be extended to instructors in history, geography, commerce and government, always providing these were sufficiently familiar with the language of the country where they are to give their services. In the case of distinguished professors who lecture on international topics, interpreters are sometimes used, but for the rank and file of instructors, ability to teach in the language of the foreign country would be, if not a requisite, at least a great asset.

In such an exchange arrangement the traveling expenses could be met either by the teacher himself or by the institution sending him, as might seem best; in many cases a teacher would be glad to pay these expenses in return for the opportunity afforded him for travel and wider experience.

Another plan now being tried by a distinguished South American educator is to send young normal graduates abroad for a year, positions being found for them by personal friends of his in the United

States. Some State university or other large educational institution in this country might guarantee to place a certain number of teachers each year, in exchange for a similar guarantee on the part of a university in Latin America.

The section of education of the Pan American Union will heartily welcome any suggestions along these lines, and wishes particularly to hear from educational institutions in any of the American Republics willing to enter into an exchange arrangement. This organization is the one called upon to act as a clearing house in all such matters.

The study of Spanish in the United States goes forward by leaps and bounds, and Portuguese also is becoming more popular, while courses in Latin American history, geography, and commerce, and international relations are constantly being added to the curricula of schools and colleges. The section of education would be very glad to receive information regarding courses in these subjects offered anywhere, as well as reports concerning Spanish or Portuguese clubs, Latin American student associations, and periodicals relating to these activities. It is the desire of the Pan American Union that this section may serve as a clearing house, as has already been said, for all those desiring information about educational matters in any of the American Republics, and for all movements looking to the promotion of Pan Americanism through the interchange of students and teachers, and, in general, to the upbuilding of educational reciprocity and progress in all the Americas. The section of education will be glad to answer any specific inquiries that may be made regarding education in any part of the Americas, and especially to offer all possible assistance to students, whether from Latin America or from the United States, who desire information regarding the opportunities open to them in their sister republics.

BOOK NOTES

[A partial list of publications received in the Columbus Memorial Library during June, 1918.]

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El Sol. Marianao. Irregular.
The Times of Cuba. Habana. Monthly.

DOMINICAN REPUBLIC.

Boletín Judicial. Santo Domingo. Monthly.
Boletín Mercantil. San Pedro de Macoris. Daily.
El Diario. Santiago de los Caballeros. Daily.
Ecos del Norte. Puerto Plata. Daily.
Gaceta Oficial. Santo Domingo. Irregular.
Listin Diario. Santo Domingo. Daily.
La Pluma. Santiago de los Caballeros. Monthly.
El Porvenir. Puerto Plata. Weekly.
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ECUADOR.

Boletín de la Cámara de Comercio y Agricultura. Guayaquil. Monthly.
Boletín del Ministerio de Relaciones Exteriores. Quito. Irregular.
El Ecuatoriano. Guayaquil. Daily.
El Globo. Bahia de Caráquez. Daily.
Registro Oficial. Quito. Daily.

GUATEMALA.

Centro América. Guatemala. Quarterly.
Diario de Centro América. Guatemala. Daily.
El 15 de Marzo. San Juan Sacatepequez. Irregular.
El Guatemalteco. Guatemala. Daily.

HAITI.

Bulletin Religieux d'Haïti. Port-au-Prince. Monthly.
L'Essor. Port-au-Prince. Daily.
Le Matin. Port-au-Prince. Daily.
Le Moniteur. Port-au-Prince. Irregular.
Le Nouvelliste. Port-au-Prince. Daily.

HONDURAS.

Atlantida. La Ceiba. Weekly.
Boletín del Ejército. Tegucigalpa. Monthly.
Boletín Legislativo. Tegucigalpa. Irregular.
Germinal. Tegucigalpa. Weekly.
El Cronista. Tegucigalpa. Daily.
La Gaceta. Tegucigalpa. Irregular.
El Nuevo Tiempo. Tegucigalpa. Daily.
Tegucigalpa. Tegucigalpa. Weekly.
Vida. La Ceiba. Monthly.

MEXICO.

Blake's Bulletin. Mexico City. Monthly.
Boletín de la Cámara Agrícola Nacional Jalisciense. Guadalajara. Monthly.
Boletín de la Cámara Nacional de Comercio. Mexico City. Monthly.
Boletín de la Cámara Nacional de Comercio. San Luis Potosi. Monthly.
Boletín de la Cámara Nacional de Comercio. Vera Cruz. Monthly.
Boletín de Ingenieros. Mexico City. Monthly.
Boletín Minero. Mexico City. Semimonthly.
Boletín Oficial de la Secretaría de Agricultura y Fomento. Mexico City. Monthly.
Boletín del Petroleo. Mexico City. Monthly.
Boletín Oficial de la Secretaría de Fomento, Colonización e Industria. Mexico City Monthly.
Boletín de la Secretaria de Hacienda. Mexico City. Monthly.
El Correo de la Tarde. Mazatlán. Daily.
El Diario. Mexico City. Daily.
Diario Oficial. Mérida. Daily.
Diario Oficial. Mexico City. Daily.
El Economista. Mexico City. Weekly.
Excelsior. Mexico City. Daily.
Gaceta Municipal. Guadalajara. Monthly.
El Informador. Guadalajara. Daily.
Oriente. Mérida. Monthly.

Prosperidad. Monterey. Monthly.
El Pueblo. Mexico City. Daily.
Revista de Revistas. Mexico City. Weekly.
Tohtli. Mexico City. Monthly.
El Universal. Mexico City. Daily.
El Universal Ilustrado. Mexico City. Weekly.
El Universal Infantil. Mexico City. Monthly.
Yucatán Escolar. Merida. Monthly.

NICARAGUA.

El Foro Nicaragüense. Managua. Monthly.
La Voz Atlántico. Bluefields. Weekly.

PANAMA.

El Agricultor. David. Weekly.
Panama Morning Journal. Panama City. Daily.
La Revista Nueva. Panama City. Monthly.
Star and Herald. Panama City. Weekly.

PARAGUAY.

El Diario. Asunción. Daily.
El Economista Paraguayo. Asunción. Weekly.
El Liberal. Asunción. Daily.
Revista de Comercio. Asunción. Bimonthly.
La Tribuna. Asunción. Daily.

PERU.

La Agricultura. Lima. Monthly.
Boletín de Aduanas. Callao. Weekly.
Boletín de la Bolsa Comercial de Lima. Lima. Daily.
Boletín de Minas Industrias y Construcciones. Lima. Monthly
El Callao. Callao. Daily.
El Comercio. Lima. Daily.
La Crónica. Lima. Daily.
El Departamento de Ancash. Huarás. Daily.
Economista Peruano. Lima. Monthly.
El Ferrocarril. Cajamarca. Weekly.
El Financista. Lima. Semimonthly.
Industria. Lima. Semimonthly.
La Industria. Trujillo. Daily.
Ingeniera. Lima. Semimonthly.
El Peruano. Lima. Daily.
La Prensa. Lima. Daily.
Revista de Marina. Callao. Monthly.
Variedades. Lima. Weekly.
West Coast Leader. Lima. Weekly.

SALVADOR.

Diario de Occidente. Santa Ana. Daily.
Diario del Salvador. San Salvador. Daily.
La Prensa. San Salvador. Daily.
Revista Militar. San Salvador. Monthly.

URUGUAY.

La Aduana Uruguaya. Montevideo. Semimonthly.
Anales de la Facultad de Medicina. Montevideo. Quarterly.
Arquitectura. Montevideo. Monthly.
Avisos á los Navegantes. Montevideo. Irregular.
Boletín del Consejo Nacional de Higiene. Montevideo. Monthly.
Boletín Mensual de Estadística Municipal. Montevideo. Monthly.
Boletín Mensual del Instituto Nacional Físico-Climatológico. Montevideo. Monthly.
Boletín Mensual (Policia Sanitaria de los Animales). Montevideo. Monthly.
Boletín del Ministerio de Hacienda. Montevideo. Monthly.
Boletín del Ministerio de Relaciones Exteriores. Montevideo. Monthly.
El Día. Montevideo. Daily.
Diario Oficial. Montevideo. Daily.
Ecos del Progreso. Salto. Daily.
El Estanciero. Montevideo. Bimonthly.
La Mañana. Montevideo. Daily.
Montevideo Times. Montevideo. Daily.
La Propiedad Urbana. Montevideo. Monthly.
Revista de la Asociación Politécnica del Uruguay. Montevideo. Monthly.
Revista de la Asociación Rural del Uruguay. Montevideo. Monthly.
Revista del Centro Militar y Naval. Montevideo. Monthly.
Revista Comercial. Montevideo. Monthly.
Revista del Ministerio de Industrias. Montevideo. Monthly.
Revista Unión Industrial Uruguaya. Montevideo. Monthly.
Uruguay Weekly News. Montevideo. Weekly.

VENEZUELA.

A B C. Caracas. Weekly.
Gaceta Médica de Caracas. Caracas. Semimonthly.
Gaceta Oficial. Caracas. Daily.
El Heraldo Industrial. Caracas. Weekly.
Informe Mensual Sanitario y Demográfico de la Oficina de Sanidad Nacional. Caracas. Monthly.
El Nuevo Diario. Caracas. Daily.
Panorama. Maracaibo. Daily.
La Revista. Caracas. Weekly.
Revista de Ciencias Políticas. Caracas. Monthly.
Revista de Estudios de Ingeniería. Caracas. Monthly.
El Universal. Caracas. Daily.
Venezuela Contemporánea. Caracas. Monthly.

EXPORTS OF ARGENTINA IN 1917

THE exports of Argentina, expressed in quantities, for the year 1917 show in general a considerable decrease compared with the exports for the preceding year.

Under the three general headings in which Argentine exports are classified—namely, cattle and cattle products, agricultural products, and forest products—the decreases in the main are in agricultural products; notably in wheat, corn, oats, barley, and linseed. The only agricultural product which shows an increase is beans (porotos).

Under the heading "Cattle and cattle products," the most marked decreases were in frozen beef and mutton and in goat and sheep skins. There were increases in wool, jerked and canned beef, in butter and oleomargarine, in cheese, and in tallow.

The following table shows the exports for the years 1916 and 1917 in quantities, and the increase or decrease in each case.

CATTLE AND CATTLE PRODUCTS.

Articles.		1917	1916	Difference.
Bovine animals	number	71,355	51,919	+ 19,436
Horses	do	11,760	28,314	−16,554
Frozen beef	tons	355,842	411,547	−55,705
Chilled beef	do	38,995	16,153	+22,842
Frozen mutton	do	39,820	51,318	−11,498
Frozen pigs	do	764	1,345	− 581
Goatskins	do	1,904	3,213	− 1,309
Sheepskins	do	11,325	14,551	− 3,226
Salted oxhides	do	76,182	77,841	− 1,659
Dried oxhides	do	19,305	21,549	− 2,244
Dried and salted horsehides	do	3,950	3,950	.....
Washed wool	do	8,089	3,902	+ 4,187
Unwashed wool	do	127,433	117,657	+ 9,776
Jerked beef	do	7,613	1,120	+ 6,493
Canned meat	do	100,784	44,569	+56,215
Frozen and canned tongues	do	1,807	826	+ 981
Frozen offal	do	13,590	17,871	− 4,281
Butter	do	9,830	5,671	+ 4,159
Margarine and palmitine	do	13,312	2,367	+10,945
Cheese	do	2,728	228	+ 2,500
Tallow and melted fat	do	67,810	48,685	+19,125
Bones	do	25,118	20,452	+ 4,666

AGRICULTURAL PRODUCTS.

Oats	tons	271,713	804,443	− 532,730
Barley	do	12,321	67,580	− 55,259
Linseed	do	141,308	639,914	− 498,606
Corn	do	883,939	2,873,910	− 1,979,971
Potatoes	do	14,760	27,606	− 12,846
Fodder	do	6,958	27,963	− 21,005
Beans (porotos)	do	5,017	2,418	+ 2,599
Wheat	do	935,828	2,294,876	− 1,359,048
Alcohol	liters	3,475,271	16,015,316	−12,540,045
Wheat flour	tons	112,465	144,290	− 31,825
Argentine wine	liters	3,411,628	5,837,325	− 2,425,697
Bran	tons	19,872	29,035	− 9,163
Oilseed cake	do	17,168	18,104	− 936

FOREST PRODUCTS.

Articles.		1917	1916	Difference.
Extract of quebracho	tons	90,777	97,574	− 6,797
Timber	do	172,538	12,613	+159,925
Quebracho logs	do	133,170	161,734	− 28,564

SUBJECT MATTER OF CONSULAR REPORTS

REPORTS RECEIVED TO AUGUST 8, 1918.

Title.	Date.	Author.
ARGENTINA.	1918.	
Imports of cork wood and cork, nine months of 1917	May 24	W. Henry Robertson, consul general at Buenos Aires.
Mica exports for 1913 and 1917	...do	Do.
Organization of Allied Chamber of Commerce in Buenos Aires.	May 30	Do.
Exports of quebracho and quebracho extract	May 31	Wilbert L. Bonney, consul at Rosario.
Forecast of the cereal harvest, 1917 18	June 1	W. Henry Robertson.
BRAZIL.		
Disinfection of cotton seed imported into Brazil	May 23	Richard P. Momsen, vice consul at Rio de Janeiro.
Internal-revenue receipts of the State of Rio de Janeiro for 1917.	May 27	Do.
Telephone system in Brazil	May 28	Do.
Corn and cotton show in Brazil	May 29	Do.
New bridge of reinforced concrete constructed in State of Minas Geraes.	...do	Do.
Report of the Director of Public Health for year 1917	May 31	Do.
Brazilian trade in automobiles. Imports 1913 1917	...do	Do.
A British insurance company's operations in Brazil	June 1	Do.
Receipts of Brazilian Government-owned steamship line, three months of 1917 and 1918.	June 3	Do.
Sea shells used in the manufacture of buttons in Brazil	June 5	Do.
Brazilian Government promulgates resolution in International American Conference providing for decennial census of population and industry.	June 6	Do.
Industrial Congress of the State of Rio de Janeiro	June 7	Do.
Brazilian Government promulgates resolution of International American Conference in regard to Pan American Railroad.	June 10	Do.
Branch house of Danish commercial company incorporated in Brazil (Rio de Janeiro).	...do	Do.
COLOMBIA.		
Capital increase in principal textile factory	June 8	John A. Dunn, vice consul at Barranquilla.
Proposed municipally-owned telephone system for Baranquilla.	June 10	Do.
Statistical annuary of Baranquilla to be issued each year, beginning with January, 1919.	June 21	Do.
DOMINICAN REPUBLIC.	1918.	
Hardwoods in the Dominican Republic	May 23	Arthur McLean, consul at Puerto Plata.
ECUADOR.		
Guayaquil market reports for April, 1918	May 8	Frederic W. Goding, consul general at Guayaquil.
Guayaquil market reports for May, 1918	June 13	Do.
HONDURAS.		
Crop report	June 3	Francis J. Dyer, consul at Tegucigalpa.
Annual report of district for 1917	June 25	Chas. N. Willard, consul at Ceiba.
Cohune nut industry	June 29	Walter F. Boyle, consul at Puerto Cortes.

Reports received to Aug. 1, 1918—Continued.

Title.	Date.	Author.
MEXICO.	1918.	
Market for brick-making machinery	May 31	John A. Gamon, consul at Acapulco.
Annual report of district for 1917	June 8	Thomas D. Bowman, consul at Frontera.
Corrected presidential decree of June 7, 1918 (export tariff).	June 14	Luther K. Zabriskie, vice consul at Mexico City.
Extension of period for free entry of automobiles	June 22	Do.
Opening of the commercial museum of Mexico	June 25	Do.
Mexico City market for check-canceling machines	June 26	Do.
Table of planting and reaping periods in Mexico	...do	Thomas Dickinson, vice consul at Monterey.
Automobile trucks	June 27	W. E. Chapman, consul at Mazatlan.
Sugar industry	June 29	John R. Silliman, consul at Guadalajara.
Changes in Mexican import duties	July 2	Donald M. Ingram, consular assistant at Nuevo Laredo.
PARAGUAY.		
Market for furniture	May 18	Henry H. Balch, consul at Asuncion.
Trade of Paraguay by parcels post with England, France, Belgium, and Germany before the war (rates).	May 28	Do.
Drug market	May 29	Do.
Market for men's clothing	...do	Do.
PERU.		
List of newspapers in Lima	June 5	William W. Handley, consul general at Lima.
Regarding the consumption of oxygen and acetylene in Lima.	June 6	Do.
VENEZUELA.		
Poisoned waters kill pearl oysters	May 29	Homer Brett, consul at La Guaira.
Market for drugs	June 8	Emil Sauer, consul at Maracaibo.
Hydroelectric development scheme in Venezuela	June 27	Homer Brett, consul at La Guaira.
Toy factory in Caracas	June 29	Do.

ARGENTINE REPUBLIC

On May 16 last, on the occasion of the opening of the regular session of the Fifty-seventh Congress in Buenos Aires, the vice president of the Republic, in the absence of President Irigoyen from the national capital, read the ANNUAL MESSAGE. The Executive stated that the public consolidated debt of the Argentine Republic represented on December 31, 1917, registered bonds to the nominal value of 1,353,815,392 pesos national currency, and that after deducting from this sum the amount of the bonds held by the Government, the cash debt is reduced to 1,244,248,911 pesos currency. Recommendations are made to add to the artillery branch of the army a large number of howitzers of 10.5 centimeters caliber, increase the number of heavy artillery pieces, add to the number of artillerymen, and install at as early a date as possible powder and munition factories. The announcement is made that a bill will soon be submitted to Congress requesting authority to furnish the fleet with such material, supplies, etc., as may be deemed expedient, and to equip the shops of the arsenals with machinery and materials that will enable them to perform their work in the most satisfactory manner, and, finally, to establish naval stations along the southern coast of the Republic. The lack of shipping and the high maritime freight rates are felt more and more daily, and, in a measure to relieve this condition, the Government proposes to transform the older vessels of the fleet into commercial freight carriers. The first of these to be utilized for this purpose are the "Patagonia" and the "Tiempo," which are to be employed in developing trade with Patagonia and Tierra del Fuego. A number of dredges used by the Department of Public Works are to be made into transports and used for commercial purposes. The government railways in exploitation on December 31, 1917, aggregated 6,139 kilometers, and the net deficit of their operation on the date mentioned was 1,724,619 pesos, currency (paper peso = $0.4475). The port works of Buenos Aires, construction work on which was stopped in September, 1917, have been repaired so as to allow vessels to anchor alongside the first wharf and receive cargo direct from the warehouses.——A MASONIC CONGRESS was held in Buenos Aires during the latter part of May, 1918, in which 25 nationalities were represented. It was resolved to open the next congress in Porto Alegre, Brazil, on November 15, 1920, anniversary of the independence of Brazil.——On May 12 last a stock EXPOSITION was opened in Buenos Aires under the auspices of the Argentine Rural Society.——On May 22 of the present year a society representing the MOVING-PICTURE interests in

Buenos Aires was organized. By-laws and rules and regulations were adopted, and the following officers were elected: Angel De Rosa, president; Francisco Jaria, secretary, and Virgilio Mendez, treasurer.——Press reports state that the JOCKEY CLUB of the national capital has given to the municipality of Buenos Aires 1,240,337 pesos, currency (paper peso = $0.4475) for educational and charitable purposes and for the construction of moderate-priced dwelling houses.——According to cable advices the Japanese Government has decided to establish a LEGATION in the Argentine Republic in charge of Gi Nakamura, formerly consul general of Japan in New York and later chief of the Bureau of Political Affairs of the Japanese Government. In 1917 Argentina imported Japanese merchandise to the value of 3,319,255 gold pesos, and exported to that country products valued at 2,110,596 gold pesos (gold peso = $0.9648).——A census of the CITY OF CORDOBA, taken on April 30, 1918, shows the population of that city to be 152,800 inhabitants.——The 1917 crop of WOOL of the Argentine Republic is estimated at 140,000,000 kilos, valued at 300,000,000 pesos. The number of sheep in the country is said to be more than 80,000,000.

BOLIVIA

Former President Móntes, of Bolivia, reached the United States en route to France, where he goes to assume the duties of the post of envoy extraordinary and minister plenipotentiary from Bolivia. While in Washington GEN. MÓNTES WAS RECEIVED IN AUDIENCE BY PRESIDENT WILSON.——EL NORTE, a well-known daily journal of La Paz, published under date of April 1, 1918, a 24-page anniversary number, which carried pictures of the founders and others who were instrumental in establishing the journal. A total of about 40 well-selected illustrations are contained within its pages, as well as much news matter and informative articles relative to Bolivia and its progress. The paper is now 5 years old.——Señor Alfredo Ballivian, FORMER MINISTER OF HACIENDA, of Bolivia, has arrived in Valparaiso to assume charge of certain business interests he temporarily abandoned in order to serve in the Bolivian cabinet. Replying to questions addressed to him by newspaper men of Valparaiso, Señor Ballivian stated that Bolivian commercial and industrial interests are in a flourishing condition, and that especially copper and tin are being mined in vast quantities. He spoke enthusiastically as to political conditions and of laws that in recent years have aided materially in advancing the country's trade.——The Mesa Directiva of the House of Deputies has announced that young men

with STENOGRAPHIC and intellectual qualifications will be permitted to practice their work in the National Congress, with a view of later taking positions in public service.——Diversity of opinion seems to exist in Bolivia as to the advisability of encouraging the importation of large bodies of LABORERS FROM JAPAN, although laborers are needed in connection with Bolivia's progress. Many persons believe that Japanese laborers will supply certain need, especially when placed in eastern Bolivia, where the altitude is not great and where climatic and other conditions are not unlike those of Japan. El Tiempo, of La Paz, under date May 28, discusses the question at some length.——Boletin Dental is the name of a new publication recently issued from the press in La Paz. As indicated by the name, its field will be connected with the PROGRESS OF THE DENTAL PROFESSION. Señor Armando Forguez is the director and Señor Guillermo Zuleta A., the secretary and editor. Both are promising and popular young men of the dental profession and their enterprise is looked upon with favor.——Don Manuel B. Ballivian, the veteran statesman and scholar, on behalf of the Geographic Society of La Paz, has offered the services of the society in maintaining OFFICIAL TIME in Bolivia, a matter which in the past has been the work of Don Eduardo Idiaquez, recently deceased. Señor Ballivian has addressed a letter to the Minister of Government and Public Works making the tender of services.——Authorities of the Department of Cochabamba recently inaugurated service on the NEW HIGHWAY linking Parotani, the terminal point of the electrical line from Cochabamba, with the town of Yapacari. The latter is the capital of the Province of the same name, and the new road will be an important agency in the commercial progress of the place, giving a much quicker route to the thriving city of Cochabamba.——Officials of the Banco Agrandona, Sucre, have arranged a loan of 250,000 bolivianos (Boliviano equals about 38 cents United States currency) for the purpose of constructing a HIGHWAY BETWEEN SUCRE AND MONTEAGUDO. Work on the new road will begin at an early date.——A dispatch from Tupiza, Bolivia, announces that STEEL RAILS for the railroad now under construction between La Quiaca and Tupiza are to be purchased in the United States. The French firm of Vezin is the contractor for the road, the distance being about 66 miles.——The municipal officials of the city of Santa Cruz are considering the matter of constructing a NEW SLAUGHTERHOUSE, which it is proposed shall embody modern facilities for the production of meats and other foods.——A cable dispatch just received from the Minister of Finance of Bolivia states that the EXPORTS of that country in 1917 amounted to 151,797,031 kilos, valued at 157,748,054 bolivianos, and the imports 147,267,237 kilos valued at 33,480,831 bolivianos. (Kilo=2.2046 pounds; boliviano=$0.3893.)

BRAZIL

The Government of Brazil has granted a concession to the Western Union Telegraph Co. to lay two CABLES, one from Nictheroy north, via the Island of Fernando de Noronha, Natal, and Belem to the West Indies; and another from Nictheroy, via Paranagua, to Maldonado, Uruguay, from which place it may be extended to the Argentine Republic. A decree of November, 1917, authorized the Minister of Transportation and Public Works to expend 1,000 contos (paper conto = about $270) in improving the telegraph service of the country. To this amount there was recently added an additional credit of 600 contos to meet unforeseen expenditures required in this work. The Government is now completing the construction of a telegraph line from Rio de Janeiro, via São Paulo, to Porto Alegre, in the State of Rio Grande do Sul. This work is expected to be terminated before the end of the present year.——A company has been organized to work the CAUSTIC SODA DEPOSITS discovered by Antonio Martinez in the State of São Paulo.——Sebastião Carani has completed in the city of São Paulo the construction of his first AIRPLANE. This machine is on exhibition, and it is proposed to continue the construction of this type of flying machine on as large a scale as may be necessary to meet the needs of the Brazilian Government.——The COMPAGNIE FRANCAISE DU PORT (Port Co.) of Rio Grande do Sul has sold to the Swift Packing Co. over 6,000 square meters of land, which, together with 2,607 meters obtained from the Government, are to be used in improving their terminal facilities at the port referred to. Should the land ever be needed for the improvement of the port of Rio Grande do Sul, Swift & Co. agree to resell at the price paid for same.——The Minas Western RAILWAY is to receive aid from the Government to the amount of 5,000 contos to be expended in extending its line to the port of Angra dos Reis, thereby opening rail communication between the port referred to and the State of Goyaz.——Press reports state that the unusually low temperatures to which the COFFEE plantations were recently subject in São Paulo have greatly damaged the young trees and reduced the production of the older plantations by about 50 per cent. It is estimated that it will take until 1921 for the plantations to recover their former production. Other tender crops in the State referred to, such as sugar cane, castor beans, and fruits, are said to have been destroyed.——Announcement is made that the United States Shipping Board has allotted a vessel, which will sail from Brazil about the middle of August next, to carry COFFEE from that country to New Orleans at a freight charge of $1.70 per bag.——In 1917 the

imports of AUTOMOBILES into Brazil numbered 1,648, nearly all of which came from the United States. These machines were valued at $1,412,236.——João Gentil, a Brazilian aviator, was recently commissioned by the Government of Brazil to visit the United States with the object of purchasing a number of AIRPLANES.——A hosiery factory at Porto Alegre, State of Rio Grande do Sul, has added a PEARL BUTTON department to its plant. The buttons are made from shells obtained from nearby rivers, are of three sizes, an are intended to supply the local demands.——At the present time there are 30 kilometers of HIGHWAYS under construction in the outlying sections of the federal district. It is expected that these will be completed before the end of the present year.——ELECTRIC light and power service was inaugurated in the cities of Mar de Hespanha and Manhuassu in the early part of May last.——The use and sale of FIREWORKS in the federal district, as well as fire balloons, bonfires, etc., in public places, has been prohibited.——A bill has been introduced into the Brazilian Congress providing for the publication of a quarterly LABOR BULLETIN, which will treat of labor statistics, laws, judicial decisions, etc.——Plans have been prepared by Prof. Charles A. Bennett, a United States educator, of Peoria, Ill., for a SCHOOL OF TRADES to be established in Rio de Janeiro by the city government.

CHILE

Congress has approved the expense BUDGET of the Government of Chile for 1918, submitted to it by the President of the Republic, amounting to 206,994,238 pesos paper (paper peso = $0.33), and 64,889,666 pesos gold (gold peso = $0.365). President Juan Luis Sanfuentes has also submitted to the consideration of Congress the proposed budget of receipts and expenditures for 1919, in which the receipts are estimated at 136,430,000 pesos paper and 84,700,000 pesos gold, and the expenditures at 194,671,253 pesos paper and 42,993,543 pesos gold.——At the Second South American CONTEST OF OLYMPIC GAMES, held in Buenos Aires on May 25 and 26, 1918, Juan Jorquera, the champion runner of Chile, beat the world record by running 42,200 meters (26 miles 383 yards) in 2 hours 23 minutes 5⅗ seconds. The Athletic Federation of South America was organized with headquarters in Santiago, Chile. Leopoldi Falconi was elected president; Alfredo Betteley, treasurer; and Carlos Fanta, secretary. The third South American Olympic games will be held in Montevideo, Uruguay, in April, 1919.——Las Ultimas Noticias, a daily newspaper of Santiago de Chile, states that the Chuquicamata COPPER MINES, which were purchased by North American capitalists for $1,000,000,

are now producing 10,000 tons of copper ores per day, valued at 580,000 pesos currency (paper peso = $0.33). It is proposed to increase this output in the near future fivefold. The mines employ about 6,000 persons and have machinery and installations of an approximate value of 14,000,000 gold pesos (gold peso = $0.365).——A FIRE-BRICK FACTORY has been established at Las Animas, near Valdivia, with a capacity for the manufacture of 1,000 bricks per day. The factory uses wood as a fuel and is equipped with modern machinery. Extensive beds of an excellent clay for making fire-brick exist in the vicinity.——The Society for the Encouragement of Manufactures in Chile recently employed Señor Sotelo Rejiji, representing the henequen exporters of Yucatan, Mexico, to investigate and report upon the feasibility of establishing in the Republic a factory for the manufacture of TWINE AND SISAL BAGS to be operated with Chilean and Mexican capital. The investigations have not yet been completed, but it is believed that recommendations will be made to establish and operate a factory similar to the one now in operation in Yucatan, whose capacity is not large enough to supply the present demand for these products. It is estimated that the nitrate industry of Chile alone consumes 30,000,000 jute sacks annually.——A PIANO FACTORY is in operation in Punta Arenas, the southernmost city of Chile. Native woods are used in the manufacture of these instruments, but the industry is somewhat handicapped, due to the fact that Punta Arenas is a free port, and exports from that city, even of articles manufactured out of Chilean raw material, are subject to the payment of customs duties on entering other ports of the country.——SHIPYARDS are being built in southern Chile at Linao, a port between Ancud and Castro, about five hours from Puerto Montt, which will be ready in September next to begin the construction of wooden vessels having a displacement up to 5,000 tons. Chilean oak, larch, and other native woods are to be utilized in this work. The first ship from these yards, a vessel of 3,000 tons burden, is to be launched in March next, and soon thereafter another vessel of equal size will be ready for use.——The Second Annual TERRITORIAL FAIR is planned to be held in Punta Arenas in February, 1919. Special attention will be given to exhibits of sheep, cattle, and horses, and there will also be exhibits of machinery and supplies connected with the live-stock industry of the Territory of Magallanes.——The LONGITUDINAL RAILWAY of Chile, which traverses the Republic from north to south over a distance of 3,394 kilometers, is a Government-owned line embracing with its spurs and the Arica to La Paz Railway an extent of 5,100 kilometers. Adding to this the 3,120 kilometers of privately owned lines, a railway system of 8,220 kilometers is formed to cover a territory 4,800 kilometers long, having an average width of about 190 kilometers.

COLOMBIA

According to data relating to the NAVIGATION OF THE CAUCA RIVER, the steamboats which plied on that stream during the second half of the past year transported 4,761 passengers and 3,004,838 kilos of freight.——The freight traffic of the BUENAVENTURA CUSTOMHOUSE in 1917 consisted of imports weighing 11,799,893 kilos, valued at $2,636,419 gold, on which import duties were collected to the amount of $849,211 gold, and exports aggregating 14,452,123 kilos, valued at $4,741,681 gold, on which export duties were paid amounting to $12,720 gold.——The governor of the Department of the Cauca Valley has authorized Elmer H. Smith, an American physician, to PRACTICE MEDICINE in that Department. Dr. Smith has opened a sanatorium at La Cumbre, near Cali.——The treasury department has issued a decree providing for the liquidation of the 1918–19 BUDGET, the net receipts having been estimated at $17,811,000 gold and the expenditures at $17,548,746 gold. The net amount of the special credit budget for the issue of bonds of the public debt was fixed at $1,635,000 gold.——On May 16 last the first copies of the COMMERCIAL, INDUSTRIAL, AND AGRICULTURAL GUIDE of Colombia, compiled and published by Belisario Arenas Paez, was placed on sale.——Acting in accordance with authority conferred upon him by the legislature, the governor of the Department of Boyaca has called for a competitive contest of Colombian writers in the preparation of an elementary textbook on the HISTORY AND GEOGRAPHY of the Department of Boyaca for use in the public schools. The manuscript receiving the award will be published by the Government and distributed to the schools on the occasion of the celebration of the first centenary of the battle of Boyaca, which engagement insured the independence of Colombia.——The society for the embellishment of Bogotá has appointed a committee to arrange for the erection of a MONUMENT to Antonio Ricaurte, one of the great heroes of Colombian independence. This committee is to work in cooperation with the one appointed in 1912 for the same purpose under an act of Congress.——Two Colombian physicians have established in the national capital a LABORATORY OF HYGIENE scientifically equipped and modeled after the plans of the laboratory of the State of New York.——In the presidential election for 1918 the votes cast numbered 407,134, as compared with 337,499 in 1914. The Departments of Cundinamarca, Boyaca, and Antioquia contributed the majority of the votes.——The machinery ordered from abroad for the equipment of a factory for the manufacture of COTTON THREAD has arrived at Barranquilla and will soon be installed. Another factory for

the manufacture of woolen yarn is soon to be put in operation at Barranquilla.——The date fixed for the exchange of NATIONAL SILVER COIN minted before 1911 and foreign silver coin circulating in the Republic has been extended to December 31, 1918.——The legislature of the Department of Antioquia has ordered prepared a geographic and geologic MAP of that Department.——The Charity Hospital at Barranquilla has established a SCHOOL FOR NURSES.——The legislature of the Department of Santander has ordered the gross receipts belonging to that Department for the exploitation of the newly discovered petroleum deposits to be expended in the continuation of the PUERTO WILCHES RAILWAY.——The All American BANKING Corporation, the Mercantile American Bank of Colombia, and the Royal Bank of Canada, according to press reports, are to establish branches in Cartagena.——The legislature of Antioquia has approved a project for the opening of a TUNNEL in La Quiebra Pass, on the line of the Antioquia Railway.

COSTA RICA

The Congress of Costa Rica has granted to John M. Amory & Son, of the city of New York, a concession to prospect for and exploit PETROLEUM and other hydrocarbons in the provinces of Cartago, Alajuela, Heredia, and San José. The concessionaires agree to expend in preliminary work within the next two years not less than $20,000 American gold and to invest within a period of three years a minimum sum of $125,000 gold in developing and working the petroleum and hydrocarbon deposits in said territory, and, within the next seven years after the expiration of the three years referred to, to expend in continuing the prospecting, development, and exploitation of the deposits covered by this contract not less than 1,000,000 colones (colon = $0.4653). In so far as possible Costa Rican engineers and workmen are to be employed in prospecting, surveying, and working the petroleum and hydrocarbon deposits encountered. Any other mineral products than those mentioned or related thereto found by the concessionaires in prosecuting their work belong to the State or to private persons. The concessionaires have the right to lay pipe lines, establish petroleum refineries, sink shafts, build aqueducts, highways, railways, etc., and to do such other things as may be necessary in facilitating their work of prospecting and exploitation. For each ton of petroleum or hydrocarbons extracted from the deposits and exported the concessionaires agree to pay to the Government of Costa Rica the equivalent of $0.25 gold per ton.——A NATIONAL FOOTBALL LEAGUE has been formed in Costa Ri

with headquarters at San José. The objects of the organization are to encourage and popularize this sport throughout the Republic, combine into one organization the different clubs of the country, and establish, maintain, and direct annual competitive contests in which the victorious team will be awarded a suitable prize.——An unofficial estimate of the SUGAR output of Costa Rica for 1918 is 30,000,000 pounds.——The House of Deputies of the Congress of Costa Rica has approved a contract made by the Department of Fomento authorizing the exploitation of COAL MINES in the cantons of Grecia, Atenas, and Palmares by private parties under the control of the Government for a period of 50 years. The concessionaires have the right to import free of duty the machinery and tools needed for working the mines, and agree not to export any of the coal extracted until after the domestic needs of the country have been supplied.——The Revista Economica publishes the BUDGET of receipts and expenditures of the Government of Costa Rica for 1918, reduced to American money, showing revenues of $2,038,448 and disbursements of $2,031,206.——A MACADAMIZED ROAD 18 meters wide and 2 miles long is nearly completed between Puerto Vargas and the Talamanca coal mines. The road can be used by automobiles as well as for heavy freight traffic.——The last Costa Rican COFFEE crop harvested, according to data published by La Informacion, a daily newspaper of San José, consisted of 230,000 sacks, 180,000 of which have been exported to the United States. Judging from the condition of the coffee plantations at present, the next crop will be equal if not greater than the one referred to above.——The Yorkshire Insurance Co. (Ltd.), of York, England, and the Royal INSURANCE Co. (Ltd.), of Liverpool, have been authorized to do business in Costa Rica.——A well-equipped TANNERY has been established near Guadalupe by a Costa Rican business man at a cost of 100,000 colones and is turning out a fine leather called "badana," which is in great demand in the manufacture of boots and shoes. A factory for the making of saddle blankets is being operated in the city of Santo Domingo de Heredia. Preliminary steps have been taken looking to the establishment of a factory for the manufacture of jute sacks out of fibers produced in the Republic. Brooms for local consumption are also being manufactured in Costa Rica out of broom corn raised in the country.

CUBA

The BUDGET of the Government of the Republic of Cuba for the fiscal year 1918–19 estimates the receipts at $64,460,000 and the expenditures at $54,394,865. Of the estimated revenues $37,000,000 are from customs duties and $4,000,000 from sugar. Of

the expenditures $15,099,170 are for the account of the department of war and marine and $9,831,127 for public instruction.——Congress has enacted a law authorizing the President of the Republic to establish a LEGATION in Nicaragua, the personnel of which is to consist of a minister, first and second secretaries, a vice consul, and a chancellor. The minister to Nicaragua may also be accredited to the Governments of Salvador, Honduras, and Costa Rica. The law referred to also authorizes the establishment of a legation in Japan, with a personnel composed of a minister and first and second secretaries, and the raising of Cuba's representation in China to the rank of a legation, with a personnel consisting of a minister and a secretary of the second class. An appropriation is made for the installation of each of these legations.——The increase in population of the Provinces of Matanzas, Santa Clara, Camaguey, Pinar del Rio, and Oriente entitles these Provinces to ADDITIONAL CONGRESSMEN in the house of representatives as follows: Matanzas and Camaguey, 1 each; Pinar del Rio, 2; and Santa Clara and Oriente, 3 each.——According to press reports a company has been formed with a capital of $50,000,000 to build a SHIPYARD at Cabañas Bay, near the city of Habana, equipped to construct vessels of from 8,000 to 10,000 tons displacement. The plant is to be provided with facilities for building six vessels at one time. It is reported that a contract has been signed for the construction of 10 sailing vessels of 500 tons burden each to be employed in the coastwise trade of the Republic.——A report of the mayor of the city of Habana to the secretary of the interior of the Cuban Government shows that the POPULATION of the municipality of Habana, according to a recent census taken of that place, is 360,517 inhabitants.——The plans under consideration by Cuban and New York capitalists for the transformation into a resident zone and bathing resort of a strip of sandy waste land along the Malecon in Habana include the erection of a $2,500,000 HOTEL patterned after the most modern New York hostelries. It is expected that work on the structure, which is to contain 400 rooms, will soon be commenced.——Press reports state that a direct LINE OF STEAMERS has been recently put into service by the Japanese Steamship Co. between Japan and Cuba.——A recent decree of the President of the Republic makes the FOURTH OF JULY a national holiday in Cuba.——The present crop of Cuban SUGAR is estimated at 3,300,000 tons, the original estimate of 3,600,000 having fallen short on account of an extended drought. The sugar on hand in the island, including the quantity stored in warehouses and that held at the mills, is over 1,000,000 tons.——A company has just been organized in Habana for the manufacture of PIANOS AND PHONOGRAPHS under the name of the National Piano & Phonograph Co.——The Internationa MEDICINE CO., with a capital of $50,000, has been incorporated

in the national capital. The new company proposes to manufacture pharmaceutical and chemical supplies.——A Spanish STEAMSHIP COMPANY has decided to run a line of steamers between Spain and Cuba, stopping at the Canary Islands, Santiago de Cuba, and Habana.——It is reported that one of the oil companies near Habana recently drilled through a bed of liquid ASPHALT over 100 feet deep. This asphalt when pumped to the surface is estimated to be worth about $4 per barrel.——The coffee growers of Cuba have petitioned the Government to limit the imports of COFFEE into the island to 80,000 sacks annually in order to protect the Cuban coffee growers.

DOMINICAN REPUBLIC

The National Government has granted to the city of La Vega a parcel of land to be used by it as a site in the construction of a MUNICIPAL BUILDING. The grant prohibits the use of the land for any other purpose, except by permission of the executive power, and prescribes that the building referred to shall be erected within a period of three years. Should the work not be completed within the term mentioned the land reverts to the National Government unless an extension of time is obtained from the President of the Republic.——The Government of the Dominican Republic has authorized the printing and issuing of 50,000 INTERNAL-REVENUE STAMPS of the red-colored type of the denomination of $0.50.——The Official Gazette of May 11 contains the text of the decree appointing Dr. Luis Galvan envoy extraordinary and minister plenipotentiary of the Dominican Republic near the Government of the United States. The amended budget for 1918 appropriates the necessary funds for the annual expenses of the Dominican legation in Washington, including the salaries of the minister, the secretary of the legation, clerk hire, etc.——Paragraph 6 of Article VIII of the Dominican tariff of 1909 has been amended to read as follows: "The importation of KEROSENE of less than 150° fire test is forbidden except when imported by the National Government, by a municipality, or by private parties for exclusive use as fuel. When imported for exclusive use as fuel, the private party or parties so importing shall furnish a bond amounting to double the value of the quantity imported. This bond will be forfeited, without requiring any legal formalities, should the kerosene imported exclusively for fuel purposes be used for illumination purposes by the importer or by any other person."——An executive order has been issued modifying the provisions of article 93 of the law of communal organization so that the CITY COUNCIL of La Vega shall consist of six aldermen and an attorney (sindico). ——Executive order

No. 169 of June 13, 1918, confers upon the duly authorized committees of the DOMINICAN CLAIMS COMMISSION of 1917 for the purpose of investigating claims, the power to subpoena and compel the attendance of witnesses, to administer oaths and examine witnesses under oath, and to require the presentation of documentary evidence either public or private. Any person who shall refuse or neglect to obey a subpoena or summons to furnish documentary evidence called for by such duly authorized committee, or who shall testify falsely or fail to testify fully and completely, shall be cited by the committee before the full commission for contempt or other offense committed, and shall be triable by the full commission under the powers with which it is vested.——The Government has issued an order under which it is forbidden to send or carry out, or attempt to send or carry out of the territory of the Republic any NATIONAL COINS. Heavy penalties are imposed for the violation or attempted violation of this order.——An appropriation of $55,000, or so much thereof as may be necessary, has been made to cover the general expenses of the office and FIELD ORGANIZATION of the Department of Public Works for the fiscal year ending June 30, 1919.

The AGRICULTURAL FAIR, which opened in the city of Ambato on May 23 last, was such a success that steps have been taken by the Bureau of Agriculture of the Government of Ecuador to open a national agricultural fair in Quito on August 10, 1918, not only for the sake of its educational value, but also with a view to promoting agriculture and stock raising in the Republic. As is well known, Ecuador possesses a great variety of climates, varying from the intense heat of the Tropics to the severe cold of the elevated tablelands and mountain slopes. Cattle thrive on the grassy plains of the interior of the country and Ecuadorian cattle hides produce a leather which is said not to be excelled by that obtained from any other country of South America.——As early as 1892 a factory for manufacturing cloth of CABUYA FIBER was established at Antecha, near Ambato. In addition to weaving cloth this factory made ropes, cables, twine, and sacks and turned out strong and durable products, which were well received in the Republic. Unfortunately reverses in other business ventures caused the Spanish firm that was developing this new industry to retire from the country and give up the operation of the factory, since which time this industry has remained dormant in the Republic. The plant known as cabuya grows wild in all of the Provinces of the interior of Ecuador, and is very abundant

in the Provinces of Leon and Tanguragua, and it is estimated that there is at present enough in the wild state in these Provinces to supply the needs of factories of considerable size without resorting to the necessity of cultivating the plant industrially. Ecuador has need of thousands of sacks to facilitate shipments of salt, cacao, and tagua, and therefore now is an opportune time for the reestablishment of this industry in the Republic. The raw material is at hand in abundance, and there is an ever-increasing demand for large quantities of sacks, rope, and other articles which can be easily manufactured of the fiber referred to.——The Rockefeller Foundation recently sent a SANITARY COMMISSION, composed of four doctors and six nurses, to Guayaquil to cooperate with the authorities there in stamping out typhoid fever. Dr. A. J. Kendall is chairman of the commission——Of the 12,000 tons of VEGETABLE IVORY which the War Trade Board has authorized to be imported into the United States, 7,000 tons are permitted to come from Ecuador.——The Director of Public Works of the Government of Ecuador has been requested by the President of the Republic to submit at as early a date as possible plans and estimates for the SEWERING of the city of Bahia de Caraquez.——The advisability of installing machinery for the manufacture of BUTTONS in the penitentiary in Quito has been recommended by the superintendent of that institution and is being discussed in the press of the national capital. Ecuador supplies large quantities of ivory nuts used abroad in the manufacture of buttons. The making of certain kinds of buttons in Ecuador is considered feasible, especially at this time, because of the shortage of this article in the country caused by the effects of the European war.——A recent executive decree provides that in future the Province of Esmeraldas is entitled to send two DEPUTIES to the National Congress.——The Government of Ecuador has contracted with the Guayaquil to Quito Railway to build a BRANCH LINE from a point near San Juan Chico to the city of Riobamba.——A MANGANESE MINE, situated on the right bank of the Prenado Viejo canyon, canton de Mejia, Province of Pichincha, has been denounced by Aurelio Cañadas.

GUATEMALA

A NATIONAL EXPOSITION will be held in the city of Guatemala from the 27th to the 31st of October, 1918, inclusive. The exhibits will consist principally of construction timbers, woods used for fuel, and charcoal, sands, clays, limes, bricks, cements, construction iron, roofing and wall materials, material for the manufacture of willow wares, carriage woods, and woods for the construction of barrels, mu-

sical instruments, etc. Displays are also to be made of trees and plants producing gums and resins and the manufactures of same. The exposition of 1917 had extensive exhibits of furniture manufactured in the country, but this feature is to be omitted during the present year, because the factories engaged in this industry are temporarily devoting their activities to work connected with the reconstruction of the national capital. The furniture exhibits will again be one of the attractions of the exposition of 1919.——Congress has approved the GENERAL EXPENSE BUDGET of the Government of Guatemala for the fiscal year July 1, 1918, to June 30, 1919, inclusive, amounting to 66,497,358 pesos (exchange rate about 38 pesos to the dollar), distributed as follows: Interior and justice, 7,431,211; foreign relations, 3,775,714; treasury, 4,835,232; public credit, 23,139,148; fomento (promotion), 7,299,564; war, 10,381,963; public instruction, 8,740,856; and other expenditures (clases pasivas), 893,670 pesos.——At the request of the Department of Fomento of the Government of Guatemala the United Fruit Co. has reduced its MARITIME FREIGHT RATES on materials intended for the reconstruction of the national capital and other towns damaged by the recent earthquake to an equivalent of about 20 per cent of the regular freight rates on said materials. Freights are to be collected in accordance with the freight tariff in force, and upon proof that the materials are intended for the purpose referred to a freight refund will be made to the parties in interest.——The Diario de Centro America, a daily newspaper of the city of Guatemala, states that a printing house of the national capital has in press a book containing a description of the MONUMENTS OF THE CITY OF GUATEMALA. The work is divided into two parts—namely, one containing views and descriptions of Government buildings, and the other of temples, monuments, works of art, etc.——Dr. Ernesto Mencos, MINISTER of the Government of Guatemala near the Government of Mexico, who has been visiting in the Republic of Guatemala, has returned to his post in the City of Mexico.——Dr. José Leon Suarez, a noted international lawyer of Buenos Aires, has been appointed honorary professor in the UNIVERSITY OF GUATEMALA.——The two FILTRATION PLANTS recently installed in the Acatan and Las Minas Springs, which furnish potable water to a large part of the national capital, are now in operation, and a notable improvement in the sanitary condition of the city of Guatemala is observed.——The estimated production of MAIZE in the Republic during the present year is from 6,000,000 to 8,000,000 quintals (quintal = 101 pounds), and the estimated domestic consumption 5,000,000 quintals. This leaves a large quantity available for export.——President Manuel Estrada Cabrera has sent an autograph letter to the president of the Canal Zone RED CROSS thanking him for the assistance given by the Red Cross Society in the recent earthquake disaster. The letter

is accompanied by a gold medalion bearing the seal of Guatemala and engraved with the word gratitude, and the inscription "El Presidente de Guatemala a la Cruz Roja Americana" (The President of Guatemala to the American Red Cross).

HAITI

The executive power has issued a decree providing for a credit of 1,168,758 gourdes paper (paper gourde = $0.183) and $485,714 gold, to defray the expenses of the EXECUTIVE DEPARTMENTS during the first quarter of the fiscal year 1917–18, and fixing the expenditures for the month of June last at 365,064 gourdes paper and $151,417.——The official newspaper publishes a decree which approves the by-laws of the Haitian Stock Co. (Ltd.), which has just been organized in Port au Prince under the name of "LA COOPERATIVE." This corporation proposes to engage in the extraction, manufacture, and exploitation of animal, vegetable, and mineral oils and their products and by-products and to export or sell the same. The capital of the company is $600,000, divided into 6,000 shares of $100 each.——The Municipal Council at Port au Prince has just established a MUNICIPAL STATISTICAL OFFICE to be maintained in the same manner as are offices of this kind in the principal cities of the world. The office proposes to compile and publish at regular intervals all kinds of data relating to the demographic, school, postal, telegraph statistics, etc., of the national capital.——The administrative board and the stockholders of the Haitian company "La Nationale" have decided to hold a competitive contest throughout the Republic for the selection of two young Haitians, a boy and a girl, from 14 to 18 years of age, to be educated at the expense of that company in the best colleges and universities of the United States, allowing for each of them $1,200 annually for a period of five years, which sum, if not adequate, is to be increased to such an amount as may be deemed proper. The two persons obtaining the SCHOLARSHIPS may select the institutions in which they desire to be educated as well as the profession or work which they desire to follow.——During the latter part of May last a great celebration was held at Port au Prince for the benefit of the RED CROSS of the United States.——About the middle of June, 1918, the president of the Republic addressed a message to the Haitian people, thanking them for the quiet and order which prevailed at the time of voting on the NEW CONSTITUTION which the Government submitted for the approval of the electorate. The election returns showed 85,775 affirmative votes and 850 negative ones.——The police bureau of Port au Prince has distributed a pamphlet containing the new

rules and regulations governing the traffic of AUTOMOBILES, which have just become effective by order of the municipal council. The pamphlet is printed in French and English.——A commission consisting of Alphe Alfonse, chairman, and Clement Maglorie and Zacharie Thomas has been appointed under a recent executive decree to govern the MUNICIPALITY OF PORT AU PRINCE until after the next municipal elections.——In accordance with a decree of the municipality of Port au Prince in future the erection of DWELLINGS or other buildings having balconies, roofs, or cornices projecting over the sidewalks will not be permitted.——According to consular report there were at the end of March last in Havre, France, 1,603,453 sacks of HAITIAN COFFEE, as compared with 2,338,740 sacks on the same date of the previous year.——Mme. Luce Archin-Lay recently called a meeting in Port au Prince of the members of the Haitian committee of the PAN AMERICAN SOCIETY OF LADIES to lay before them communications received from Mr. John Barrett, secretary general of the Second Pan American Scientific Congress, which was held in Washington from December 27, 1915, to January 8, 1916, concerning the minutes and resolutions adopted by that body.——The joint stock company entitled "Usines Centrales de l'Artibenite," whose object is the cultivation of plants that will produce FIBERS for use in textile manufactures, has been authorized to do business in the Republic.

HONDURAS

The Congress of Honduras has authorized the President of the Republic to establish a BANK OF ISSUE, deposit, and discount, to be known as the "Banco de la Republica de Honduras," with a capital of a million pesos silver (silver peso = $0.6918), 50 per cent of which is to be subscribed by the State and 50 per cent to be raised from the sale of stock to the public. The bank is empowered to issue bank notes up to double the amount of its paid-up capital, but shall never place in circulation a greater sum than twice the amount of its gold and silver coin on hand. Time and sight deposits received by the bank shall be guaranteed by a gold and silver reserve of not less than 50 per cent of the amount of said deposits, as well as by commercial paper representing a value of one-half of the amount of the deposits. The bank bills placed in circulation shall represent national silver coin, and shall be issued in denominations of 1, 5, 10, 20, 50, and 100 pesos each. These bills are legal tender in the payment of national and municipal taxes and other dues. The legal domicile of the bank is Tegucigalpa, but branches and agencies may be established in other parts of the Republic and agents and corre-

spondents appointed abroad. The bank is authorized to open an account with the National Government for a sum representing not more than 20 per cent of its paid-up capital and charge interest on same at a rate not in excess of 6 per cent per annum. The bank is to be governed by a board of directors to be elected annually and whose members shall be native citizens of the Republic, as shall also the general manager, the assistant manager, and the cashier. None of the officers mentioned shall be members of the board of directors. On the expiration of concessions granted to other banks in the Republic allowing the issuance of bank notes, said permission will not be extended and the Bank of the Republic of Honduras will become the sole bank of issue of the country. The bank is to begin operations as soon as it has on hand 30 per cent of its paid-up capital. The President of the Republic is authorized to have the necessary preliminary work done so that the bank may open its doors at as early a date as possible.——The CREMATING PLANT at Tegucigalpa, operated by the National Government under the direct supervision of the Superior Board of Health, not only collects and incinerates the refuse of Tegucigalpa, but also of the city of Comayagua. Great care is taken in collecting, sorting, and burning all deleterious waste, both organic and inorganic, with the special object of maintaining in a cleanly condition the cities in question.——The Government of Honduras has granted to Vaccaro Bros., of La Ceiba, 13,250 hectares of GOVERNMENT LANDS in the Department of Atlantida for the construction of 67 kilometers of steam railway built in that department. This land was allotted on both sides of the railway in alternate parcels of 250 hectares, the intervening lands remaining in the possession of the Government.——The Government of Honduras has declared FORFEITED the contract made in April, 1914, with the Mahogany Syndicate (Ltd.), of London, authorizing the cutting of mahogany and cedar timber between the Aguan River and certain of its tributaries.——President Hipolite Irigoyen has appointed Guillermo L. Aguirre CONSUL GENERAL of the Argentine Republic in Honduras, with headquarters in Tegucigalpa.——Congress has appropriated 20,000 pesos (peso = $0.6918) for the construction of SCHOOL BUILDINGS in the Department of La Paz.

MEXICO

The Department of Industry and Commerce of the Government of Mexico has compiled figures showing that the exports of MINERAL OILS from Mexico in 1917 consisted of 4,301,743 cubic tons of crude and 2,124,292 cubic tons of refined oil, the greater part of which

went to the United States. It is estimated that more than 600,000 square kilometers of Mexican territory are underlaid with mineral oils, of which 14,373 square kilometers have been explored and 8,507 are being prospected. The daily potential production of petroleum in the Republic of Mexico is 212,593 cubic meters, or an equivalent of 1,337,212 barrels of 42 gallons each. In June last there were 339 productive petroleum wells in exploitation in the Republic, 141 wells in process of boring, and 77 sites selected and ready to be drilled. At the port of Progreso, Yucatan, an oil station was recently completed at a cost of $600,000 gold, with a capacity for storing 4,620,000 gallons of oil. About two years were required to build this station, which consists of 26 steel tanks. The Nippon Oil Co., a Japanese corporation, has just sent an agent to investigate the Mexican petroleum fields with the object of reporting to the company referred to upon the advisability of requesting permission from the Mexican Government to engage in the exploitation of oil in the Republic.——The INDO-HISPANIC CONGRESS will meet in Saltillo, capital of the State of Coahuila, in December of the present year. Three important commercial subjects will be considered in said congress—namely, the establishment in Saltillo of a hotel for Spanish immigrants, the founding in the Republic of branches of the Bank of Spain, and the installing in Spain of a commercial museum of Mexican products.——The Mexican Government has accepted an invitation to participate in an AGRICULTURAL CONGRESS to be held in Kansas City, Mo., in October, 1918, and will appoint a commission to represent its interests in that gathering.——In accordance with instructions of the Bureau of Immigration of the Mexican Government, MEXICAN CONTRACT LABORERS are not authorized to enter the United States unless their contracts have been recorded in the American consulate at the point of origin and in a Mexican consulate along the American frontier. Contractors must return at their expense Mexican laborers to the original places of departure. Disputes between contractors and Mexican laborers are to be settled in accordance with the contracts on file in the respective consulates of the two countries.——In the mining districts of the northwestern part of the State of Coahuila there are estimated to be from 8,000,000 to 10,000,000 tons of silver-lead LOW-GRADE ORES, now abandoned, which will soon be hauled to the smelters at Monterey and other parts of the country for treatment. A railway 160 kilometers long is being constructed from Cuatro Cienegas to Sierra Mojada, State of Coahuila, and as soon as completed will begin to transport these ores to the smelters.——The Excelsior, a daily newspaper of the City of Mexico, states that the exploitation of the RADIUM DEPOSITS near Guadalupe, Chihuahua, are soon to be worked by Carlos Perez, the concessionaire. These are the only radium deposits known to exist in Mexico.——

The Government of the State of Sinaloa has raised to the rank of a UNIVERSITY the former Rosales Civil College in that commonwealth. New professors have been appointed and the institution equipped for carrying on the work of a university.——Castulo Llamas, chief operator at the wireless station in Mazatlan, has invented a RECEIVER, which is claimed to be an improvement over devices of this kind used up to the present time.——The one hundred COTTON FACTORIES now in operation in the Republic are required to pay a federal tax for the second half of the fiscal year 1918 of 655,100 pesos (peso = $0.4985). The largest amount assessed any one factory is 115,000 pesos and the smallest 200 pesos.

NICARAGUA

The message which Gen. Emiliano Chamorro, President of the Republic, delivered on the occasion of the opening of the special session of Congress, which met in the national capital on May 1, 1918, recommends, among other things, the ratification of a contract for the deepening of the port of San Juan del Norte and the DREDGING OF THE SAN JUAN RIVER, so as to make that stream navigable from its mouth to Lake Nicaragua and, ultimately, through that lake to the Pacific Ocean by means of the construction of the long talked of Nicaragua Canal, the total length of which, according to the latest survey, from the natural port of San Juan del Norte on the Atlantic to the artificial port of Brito on the Pacific, is 169.5 miles. On April 2, 1918, the Department of Fomento of the Government of Nicaragua made an ad referendum contract with Ramon Henriquez, according to the terms of which the latter agrees, should the contract meet the approval of congress, to improve the port of San Juan del Norte by removing the bar at the mouth of the San Juan River to such an extent that vessels of at least 12 feet draft will have access to the harbor at all seasons of the year. The concession provides for the deepening of the San Juan River and clearing its channel throughout its entire course to a depth of not less than 6 feet. The concessionaire asks for a guaranty of 6 per cent annual interest on the capital invested in this undertaking, the right to fix freight and passenger tariffs for the navigation of the river, and the establishment of port dues for the use of the port of San Juan del Norte. The headquarters of the company is to be at the port of San Juan del Norte, its property is to be free from taxation, and its employees exempt from military duty. The estimated cost of the work is $2,047,435. The Executive says that this contract is of paramount importance and that its execution will hasten the day so long dreamed of by Nicaraguans when an interoceanic canal will

cross the territory of the Republic, thereby opening to development the regions bordering upon and drained by lakes Nicaragua and Managua and putting the nearby Atlantic Coast countries in close and easy communication with the Republic.——An order of the Secretary of the Treasury, issued at the request of the President of the Republic, fixes the prices of CARTRIDGES, caps, and empty cartridge shells offered for sale on and after August 1, 1918.——A number of farmers in the vicinity of Bluefields have recently experimented in the sowing of CEREALS, and notwithstanding that the zone referred to was believed to be unsuited to the cultivation of these grains, the prospects for obtaining good crops from the plantings are excellent.——Saenz Peña, a Chilean agronomist, who has until recently resided in Panama, proposes to establish in Nicaragua, with the consent of the Government, a number of AGRICULTURAL INDUSTRIES. Señor Peña has been in charge of important work in the Canal Zone and is an expert in the growing of tropical and subtropical products.——The Department of Fomento has received 37 MAPS from the Department of Labor of the Government of the United States. These maps represent surveys and reports made by American engineers to the Government of the United States on Panama and Central America, and especially on Nicaragua.——A report of the Secretary of the Treasury to the President of the Republic, covering the months of March and April and 13 days of May, shows INTERNAL REVENUES collected to the amount of $200,241.——The ATHENAEUM of Nicaragua, with headquarters in the national capital, has elected the following officers: Dr. Manuel Maldonado, president; Pbro. Azarias Pallais, vice president; Dr. Francisco Buitrago Diaz, first secretary; Ramon Saenz Morales, second secretary; Sofonias Salvatierra, treasurer; and Dr. Felipe Ibarra, counsellor.

PANAMA

According to press reports the CABINET of President Ciro L. Urriola is as follows: Mr. Juan B. Sosa, secretary of interior and justice; Mr. Guillermo Andreve, secretary of public instruction; Mr. Ernesto Lefevre, secretary of foreign relations; Mr. Aurelio Guardia, secretary of finance and treasury, and Mr. José Agustin Arango, assistant secretary of fomento (promotion) and public works. The President has also appointed Mr. Ruben S. Arcia, governor of the Province of Colon; Mr. Manuel S. Pinilla, governor of the Province of Veraguas; Mr. Jeptha B. Duncan, private secretary to the President; and Mr. Enrique L. Hurtado, inspector general of telegraphs.——

The question of raising PEARLS after the system used by the Japanese is being agitated in Panama. It is claimed that these gems can be grown artificially on the Pacific coast, and that pearls worth thousands of dollars could be obtained in a few years in the Panama pearl fisheries by following the simple methods used by the Japanese. The oyster abounds in Panaman waters and the natural pearls of Panama are world famous. These gems are growing more valuable from year to year and no abundance of production will ever cause them to lose their charm.——The Panama Morning Journal states that since the opening of Hotel Aspinwall on TABOGA ISLAND, a well-known health and bathing resort near the city of Panama, the permanent and transient residents of the island have steadily increased. Boats are available for persons desiring to fish in the still waters surrounding the island, and a gasoline launch makes trips to the near-by islands, thereby giving an opportunity to everyone to visit and enjoy the beautiful scenery of the numerous islands of the archipelago. The beach has also been improved and floats provided for bathers. According to weather reports the rainfall at Taboga is much less than at points nearer the Atlantic coast, and cool breezes from the Pacific Ocean blow continually, all of which add to Taboga Island's desirability as a vacation resort.——In connection with the establishment of an agricultural experimental station near the city of Panama in 1914, Prof. Henry Pittier, of the Bureau of Plant Industry of the United States, who was detailed to assist the Government of Panama in this work, made a collection of about 120 varieties of PANAMANIAN TIMBER. The collection, however, owing to the limited time at the disposal of the scientist referred to, was incomplete, and while many of the common species are lacking in the collection, the better and most abundant kinds of woods are included. In the Province of Darien there is a vast region of thickly forested land which has the appearance of a district from which no timber has ever been cut. The timber resources of the Republic are practically undeveloped, although at present one American firm is now engaged in lumbering in the Darien district. The Canal Zone contains little timber of commercial value, and the agricultural districts of western Panama practically none, but a large part of the interior of the country consists of virgin forests of untold value.——The BANANA is a food substance which is said to be growing more and more popular in Panama, and especially in the form of fried bananas. As yet banana flour is but little used, but bananas baked in a manner similar to the way in which baked potatoes are prepared are coming largely into use in the Republic. There are great tracts of land suitable for banana culture, and this fruit could be grown in quantities sufficient to meet the home demands and leave a large surplus for export.

PARAGUAY

On June 6 last the new BOARD OF TRADE BUILDING in Asuncion was formally inaugurated. The President of the Republic, the cabinet, the diplomatic corps, members of congress, and a large number of other distinguished and influential personages participated in the ceremonies. The building is one of the most substantial and beautiful edifices of the national capital.——The PARAGUAYAN SUGAR CO. has increased its capital from 300,000 gold pesos (gold peso = $0.9648) to 500,000 gold pesos, divided into 5,000 shares of 100 gold pesos each.——Press reports state that a syndicate of Argentine capitalists has been formed to build a large HOTEL at Caacupe in the Los Altos mountain range, Paraguay, near Asuncion, with the object of making it a winter resort, especially for residents of Buenos Aires and other Argentine towns. The site chosen has numerous springs of potable water, some of which are said to be mineral springs of considerable curative power in the treatment of certain maladies.——DATA COMPILED BY THE BUREAU OF STATISTICS of the Government of Paraguay show the area of the Republic, in round numbers, to be 44,500,000 hectares, of which 22,892,500 are utilized in various ways, and 21,607,500 hectares, valued at 1 peso per hectare, are unexploited government land. Of this area 27,700,000 hectares are in the western region and 16,800,000 in the eastern section of the country. The utilized portions of Paraguay consist of stock lands, 12,000,000 hectares; yerbales or Paraguayan tea lands, 2,812,500 hectares; timber lands, 8,000,000 hectares; tobacco lands, 10,000 hectares; sugar-cane lands, 6,000; rice lands, 1,000; forage lands, 8,000; peanuts, beans, corn, mandioc, fruit lands, etc., 45,000; and communal lands of cities and towns, 10,000.——The LIVE STOCK of the Republic is estimated as follows: Cattle, 5,500,000 head, valued at 66,000,000 pesos (gold peso = $0.9648); horses, 200,000 head, valued at 4,000,000 pesos; hogs, 60,000 head, valued at 1,500,000 pesos; goats, 100,000, valued at 100,000 pesos; sheep, 600,000, valued at 600,000 pesos; mules and asses to the value of 500,000 pesos; and domestic fowls to the value of 200,000 pesos, or a total live stock value of 72,900,000 pesos.——The 425 kilometers of RAILWAYS in the eastern region, including rolling stock, are valued at 8,500,000 pesos, and the 322 kilometers in the eastern region are valued at 1,610,000 pesos. The electric railways and power and light plants, including rolling stock and machinery, are valued at 2,000,000 pesos, and the 3,403 kilometers of State telegraph lines are valued at 680,600 pesos.——The MERCHANT MARINE of Paraguay, including steamers, boats, rafts, etc., is valued at 2,000,000 pesos, and government-owned boats at

200,000 pesos.——The AGRICULTURAL MACHINERY, consisting of carts, tools, etc., is valued at 1,500,000 pesos, and industrial machinery in general at 3,500,000 pesos. The agricultural wealth of the country, including tobacco, Paraguayan tea, fruits, etc., is valued at 8,000,000 pesos: the forestal wealth and products derived therefrom, 2,200,000 pesos: articles in course of manufacture and raw material, 2,000,000 pesos, and merchandise in deposit 10,000,000 pesos. The value of clothing and other articles of private use is given as 2,500,000 pesos; furniture and tools, 2,000,000; jewels, etc., 2,000,000; and carriages and coaches, 250,000 or a total of 6,750,000 pesos. The coin on hand in the banks on December 31, 1917, was 2,530,001 pesos.

PERU

An executive decree of June 7, 1918, provides for the taking of a GENERAL CENSUS OF THE REPUBLIC in 1919 on a date to be fixed later. The decree establishes a central census board to take charge of the organizing and carrying out of the work. The chairman of this board is the second vice president of the Republic, Rear Admiral Meliton Calvajal, assisted by the ministers of interior, justice, posts and telegraphs, public instruction, war, the chairman of the board of health, and the president of the Geográphic Society. Persons who refuse to give the information required are subject to a fine of from 1 to 5 Peruvian pounds (Peruvian pound = $4.866 U. S.). The General Census Board is instructed to formulate a plan for the taking of the census and to submit same to the approval of the Government.——The Economista Peruano of Lima in an article on the shortest practical route from Callao to Iquitos and the Atlantic Ocean states that the one most accessible and nearest to the Central Railway is that from Callao to Oroya and Huancayo, via the Pangoa River, along which stream it is 24 hours by mule back to the town of Andamarca, near the headwaters of the river referred to. The Pangoa River flows into the Perene River, which is navigable from Jesus Maria, near the mouth of the Pangoa River. The union of the Perene and Ene Rivers forms the Tambo River, which is navigable at all times for vessels of 12-foot draft. The Tambo River on uniting with the Urubamba forms the Ucayli River, an affluent of the Amazon above Iquitos. It is estimated that the trip over this route from Callao to Iquitos can be made in about five days. The Pangoa River region produces cotton, rice, coffee, cacao, coca, vegetable ivory, valuable woods, and numerous other products and contains large tracts of fine grazing lands. The distance from

Matahuasi station to Jesus Maria is 280 kilometers. The Government recently sent engineers to survey and report upon this route with the object of making it available for travel during all seasons of the year.——Congress has authorized the executive power to contract with a Peruvian or foreign company for the construction of a HOTEL in Zela Plaźa, Lima, the building, installation, and furniture of which is to cost not less than 200,000 Peruvian pounds (Peruvian pound = $4.8665 U. S.). Building materials, furniture, and other supplies needed in the construction and fitting up of the hotel are to be admitted into the country free of duty.——The Government of Peru has accepted an offer of 20,000 tons of Australian wheat at 7 shillings per bushel f. o. b. Australia. The Peruvian vessel *Elisabath* has been sent from Callao to bring this wheat from Australia to Peru. The Peruvian food administration has taken steps to prevent the prices of wheat flour in the hands of dealers up to June 30 last from being increased.——With the object of assisting in maintaining the meat supply of the Republic a bill has been introduced into Congress prohibiting the plowing up or destruction of ARTIFICIAL PASTURES during the continuance of the European war unless lands of an equal or greater extent are sown to the same or similar grasses. Fields of alfalfa, clover, blue grass, etc., come under the provisions of this bill.——In accordance with an arrangement made with the Government of Peru the Peruvian Steamship Co. proposes to send the steamship *Iquitos* to Calcutta to fetch on its return trip a cargo of JUTE SACKS, which are badly needed in Peru to enable miners and others to move their ores and other products.——The consul of Peru at Seattle has notified the Peruvian Government that the South American Pacific Line and W. R. Grace & Co. have added to their COMMERCIAL FLEET two vessels—namely, the *Lindvard*, of 5,000 tons, and the *Susanne*, of 3,500 tons.

SALVADOR

A CONGRESS OF WORKMEN, representing the organized labor of the Republic of Salvador, was held at Armenia, about 15 miles from the city of San Salvador, from June 2 to 8, inclusive, 1918. The deliberations of the delegates were upon subjects relating to a closer union of interests and a betterment of the condition of the working classes. The gathering was entirely nonpolitical. Abel Ciudad Real, of the city of San Salvador, was elected president of the congress; Nicolas Cabezas Duarte, of Santa Ana, vice president; and Carlos Estrada M., of San Salvador, and Rafael O. Chicas, of Santa Tecla, secretaries. Arturo Araujo was unanimously chosen honorary presi-

dent of the congress.——On June 4 last the national congress elected the following DESIGNATES TO THE PRESIDENCY of the Republic: Dr. Tomas G. Palomo, first designate; Gen. J. Miguel Batres, second delegate; and Dr. Ramon Garcia-Gonzalez, third designate.——El Diario de Salvador, a daily newspaper of the city of San Salvador, states that on May 31 last a POSTAL MONEY ORDER CONVENTION was concluded between the Governments of Salvador and Honduras. It is believed that this convention will greatly facilitate and encourage commercial transactions between the two countries.——Garcia Escobar, the poet laureate of Bolivia, has been appointed CONSUL GENERAL of the Republic of Bolivia in Salvador; M. Francisco Tijorino, consul general of Nicaragua in Salvador; and Hector Bourges, consul of Mexico in Salvador.——Press reports are to the effect that the Government of the United States will soon begin work in the construction of a building for the use of the AMERICAN LEGATION in the city of San Salvador. The site was donated by the Government of Salvador to the Government of the United States. It is understood that $50,000, gold, is available for the erection and furnishing of this building.——The congress of Salvador recently had submitted to it proposals for a franchise permitting the construction of an INTERURBAN ELECTRIC RAILWAY, the main terminal of which is to be in the city of San Salvador.——The ATHENAEUM of Salvador, with headquarters in the national capital, has arranged for a contest of pencil sketches of beautiful types of women, landscape scenery, ruins of Palenque and Copan, etc. An award of medals will be made to the successful competitors on August 6, 1918.——The students of the SCHOOL OF MEDICINE of the city of San Salvador have organized a society to represent their interests. The society proposes to publish a review, arrange a course of lectures, establish a reading room, and do such other things as it may deem expedient for the good of its members. The president of the society is Carlos Muñoz-Barillas; Joaquin Jules, vice president; and Juan Carlos Estrada R., secretary.——The city of Santa Ana has arranged for the erection of a GARBAGE CREMATING PLANT and proposes to operate same as a sanitary measure. The construction work of this plant is under the supervision of Engineer Roberto Cheyne.——An ELECTRIC light and power plant has been installed in the city of Zacatecoluca by an American firm of engineers.——Reports have been circulated that the Salvadorean Drilling Co., which has been prospecting for oil in various parts of the Republic, has encountered PETROLEUM, but deposits of commercial importance have not yet been reported to have been discovered.

URUGUAY

Announcement has been made of the discovery of COPPER ORE at Colonia, Republic of Uruguay, within 3 leagues of the port of Riachuelo and about 15 leagues from the city of Buenos Aires. The chimney of ore has a width estimated at over 120 meters. A company is to be formed to work the deposit on a large scale. A considerable quantity of ore assaying 70 per cent iron also exists in the

vicinity and is being mined for industrial purposes.——Preliminary steps have been taken looking to the holding of the WORLD'S OLYMPIAN GAMES in 1920 in Montevideo. Dr. Angel Colombo recently visited France in the interest of this undertaking and succeeded in Paris in having the idea of holding these games in Montevideo accepted in principle. Dr. Baltasar Brum, Minister of Foreign Relations and President-elect of Uruguay, is said to be in favor of the project. A plan has been prepared by Uruguayan architects for the construction of a stadium, theater, national pantheon, museum, etc., in Montevideo at a cost of 8,000,000 pesos (Uruguayan pesos = $1.0342).——A convention has been concluded between the Governments of Uruguay and the Argentine Republic under which the Military Geographic Institutes of these countries are authorized to cooperate in SURVEYING THE URUGUAY RIVER from its mouth to the point where the Cuareim River empties into the former stream. The object of the survey is to permanently fix the boundary line of the two countries between the points mentioned.——The Government of Uruguay has approved the plan initiated by the Commercial High School of Montevideo, relating to the holding in the capital of the Republic from December 17 to 24, 1918, of a COMMERCIAL CONGRESS, in which all the Governments of America will be invited to participate.——The Uruguayan and Argentine Governments have come to an understanding by which the bureaus of sanitary police for the inspection of stock of the respective countries are obligated to notify each other when imports of LIVE STOCK are rejected and to specifically state the reasons therefor.——The amended bill for the construction of the ZABALA CANAL authorizes the executive to grant a concession for the building and operation of this canal for irrigation, navigation, motive power, and water-supply purposes between Picada de Almeida, on the Santa Lucia River, Department of Canelones, to Montevideo Bay, the canal to supply up to 200,000 cubic meters of water per day. The main canal is to irrigate a minimum of 40,000 hectares of land, and the branch canals and ducts an equal minimum area of land. The State proposes to guarantee for 30 years 6 per cent interest per annum on the capital invested in the construction of the canal up to a sum not in excess of 14,500,000 pesos.——Dr. Justino Jimenez de Arechaga, secretary of agriculture of the Republic of Uruguay, is quoted as stating that the Uruguayan Republic has 57,974 ranches and 11,000,000 head of horned CATTLE.——A bill has been introduced into the national congress authorizing the municipality of Flores to borrow from the Bank of the Republic 50,000 pesos, to be expended in the construction of a MARKET and the repair of streets; the municipalities of Durazno and Rio Negro, 20,000 pesos each, for street construction and the completion of the municipal building; the municipality of San Jose, 65,000 pesos, for current expenses, market and road repair; and the municipality of Paysandu, 100,000 pesos, for the PAVING of the city.——A bill has been introduced into congress permitting BOXING MATCHES in the Republic under the supervision of the National Committee of Physical Education of Uruguay and in accordance with the rules and regulations in force governing exhibitions of this kind.——The Bureau of Agriculture of the Government of Uruguay estimates the 1918 WHEAT CROP of the Republic at 350,000,000 kilos, as compared with 146,000,000 kilos in 1917. The

local consumption of wheat in Uruguay is estimated at 190,000,000 kilos, 30,000,000 kilos of which are for seed. This leaves 160,000,000 kilos available for export.

VENEZUELA

Among the important CONTRACTS made by the department of fomento in 1917 is one concluded with the Caribbean Coal Co. for the construction and operation of a railway in the State of Zulia, the line to start from Les Castilletes, on the Gulf of Maracaibo, and terminate at the Santa Rosa and Filon de Espejo mines. Other contracts worthy of mention are the ones for the leasing of the Urao Lagoon and the storage warehouse at Lagunillas, District of Sucre, State of Merida, and the contract for the exploitation of the Santa Ana and Santa Rosa coal mines in the Benitez District, State of Sucre.——During the past year 23 deeds to PUBLIC LANDS were issued by the Venezuelan Government, 13 of which covered sales representing an area of 14,884 hectares, and 10 referred to free adjudications of an area of 3,831 hectares. Some of these lands are suitable for agriculture and some for stock raising.——From August 5, 1911, to March 5, 1917, the Venezuelan MEATS PRODUCT Syndicate (Ltd.) slaughtered and prepared for use 90,130 head of cattle.——During the fiscal year 1916–17 the Venezuelan Government registered 250 TRADE-MARKS and labels and authorized 27 patents of invention.——In 1917 the post office department handled 4,663,251 letters, 368,346 official communications, 380,153 postal cards, 462,898 registered letters, 97,988 samples, and 6,075,922 pieces of printed matter. The receipt of postal parcels at the exchange offices numbered 49,069, on which customs duties were paid to the amount of 1,210,296 bolivares. The postal parcels sent out of the country consisted of 1,313 packages, 1,088 of which were from the Caracas office.——Telegraph and TELEPHONE OPERATION in 1917 brought receipts of 496,192 bolivares, in comparison with 362,361 bolivares during the former year. The federal telegraph system has 9,358 kilometers of wire and 215 telegraph stations. The Government had 429 telephones in operation during the year, 213 of which were in Caracas.——In 1917 the CABLE MESSAGES sent to foreign countries numbered 15,722 and consisted of 174,541 words. The receipts from this source amounted to 93,329 bolivares.——The POPULATION of Venezuela on December 31, 1917, was 2,848,121 inhabitants, or an increase during the year of 20,359, made up of excess of births over deaths, 19,684, and the difference between the number of persons entering over the number departing. In 1917 there were 77,486 births, 57,802 deaths, and 8,655 marriages.——The Department of Fomento has recommended the establishment of an information and industrial PROPAGANDA BUREAU and the collection and display of samples of natural and manufactured products of the country.——A shipment of 7,000 sacks of an excellent quality of CHILEAN FLOUR was recently received, via the Panama Canal, at the Port of La Guaira, Venezuela, at a cost of 170 bolivares per bag, or the equivalent of $32.80 per barrel.